Cardno
Shaping the Future

NORTHEAST BUSINESS PARK

Supplementary Environmental Impact Statement

28 July 2008
Job No. 7800-40

Northeast Business Park Pty Ltd

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NORTHEAST BUSINESS PARK

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EXECUTIVE SUMMARY

Background

The Northeast Business Park (NEBP) is a multi-use business park and marina concept that will integrate industry, marina facilities, commercial, residential, heritage and recreational open space precincts, and is the creation of Northeast Business Park Pty Ltd (the Proponent). The NEBP is located on a strategically significant 769 hectare freehold landholding on the southern banks of the Caboolture River at Morayfield, close to the heart of Caboolture. The site has a unique set of strategic attributes, making it an ideal location for an integrated development.

An Environmental Impact Statement (EIS) for the NEBP development proposal prepared and submitted to the Department of Infrastructure and Planning (DIP) and advertised for a period of 45 days for public and advisory agency review. This process was in accordance with the EIS assessment processes under Part 4 of the *State Development and Public Works Act 1971* (SDPWO Act).

During the public consultation period, which closed 4 April 2008, a total of 29 submissions were received, of these 14 were from Government agencies and 15 from private individuals. The Coordinator General on 18 June 2008 requested further information to satisfactorily address the submissions prior to the final evaluation of the EIS. The information was requested in consultation with advisory agencies pursuant to section 35 of the SDPWO Act. Following review of supplementary information provided herein, the Coordinator General will prepare a report to communicate conclusions on the preliminary development approval applications.

The Supplementary EIS

In response to the request for supplementary information, this Supplementary EIS has been prepared which addresses key issues raised in submissions and follows the format of the Terms of Reference (ToR) prepared following the NEBP development proposal designation as a significant project.

As this Supplementary EIS responds to issues raised in submissions, it should be read in conjunction with the NEBP EIS to provide a full description of the NEBP development benefits and impacts.

The issues identified within submissions have been collated and key topics emerge. These topics include:

- strategic justification;
- project need and alternatives;
- matters of National Environmental Significance;
- land – transport, soil contamination, landscape character and visual amenity;
- water resources – flooding and stormwater management;
- coastal environment – navigational dredging, riverbank erosion and public benefit;
- nature conservation – aquatic and terrestrial ecology;
- social;
- health and safety – mosquito control, noise and air quality; and
- environmental management and monitoring.

This Supplementary EIS is underpinned by supplementary and revised technical studies which were commissioned to address key issues, and consists of the collective technical advice of the EIS Study Team. Supporting technical documentation is tabulated below.

Table ER1 Supplementary EIS List of Appendices

Status	Title	Author	Date	Appendix Reference
Supplementary	Supplementary Planning Report	Conics	July 2008	**A**
Revised	Net Benefit Assessment	AEC Group	July 2008	**B**
Supplementary/ Revised	Matters of National Environmental Significance Report	Cardno Environment	July 2008	**C**
Revised	Acid Sulfate Soil Management Plan Version 4	Cardno Environment	July 2008	**D**
Revised	MIKE21 Flood Study	Parsons Brinckerhoff	May 2008	**E**
Supplementary	Supplementary Report on Coastal Processes	Cardno Lawson Treloar	July 2008	**F**
Supplementary	Capital Dredging in a Marine Park – Public Benefit	Cardno Environment	July 2008	**G**
Supplementary	Dredge Spoil Transfer Pipeline – Review of Environmental Factors	Cardno Environment	July 2008	**H**
Supplementary	Environmental Monitoring Program	Cardno Environment	July 2008	**I**
Supplementary	Declared Fish Habitat Area Revocation Support Study	Cardno Environment	July 2008	**J**
Supplementary	Vegetation Offsets Proposal	Greening Australia	February 2008	**K**
Supplementary	Community Consultation DVD	NEBP Pty Ltd	May 2008	**L**

The Demand

The strategic justification for the NEBP development components has been demonstrated at a local and State level, with both community and government groups supporting the NEBP and through a Net Benefit Assessment.

The Southern Regional District of the DIP and the Moreton Bay Regional Council (MBRC), previously referred to as the Caboolture Shire Council, has accepted the marina location outside the urban footprint under the Southeast Queensland Regional Plan (SEQRP) given the overriding need for a marina (and marine industries) in Southeast Queensland to meet the public demand for maritime infrastructure.

The residential precincts provide a supporting residential population which contributes to the vitality and viability of the commercial aspects of the marina precincts and provide the population base load required to support the provision of public transport and community services necessary to ensure that the Mixed Industry Business Area (MIBA) precincts are an attractive 21st Century employment centre. While the extensive community consultation exercise found the residential land use component of the NEBP will uniquely satisfy the

community's needs and demands in a multitude of ways, the provision of a regionally significant MIBA development is the central focus of the NEBP proposal.

The key features which dominate the overall characteristic of land use provided at NEBP MIBA precinct include the following.

- The location of the NEBP has a strong, comparative advantage over sites in regards to access as it is situated adjacent to the Bruce Highway and the Caboolture River. Caboolture is strategically located for region-wide access to Brisbane or the Sunshine Coast.
- It is just 35 minutes from Brisbane Airport, 55 minutes from the bustling Port of Brisbane and 45 minutes from the Sunshine Coast via the Bruce Highway (M1). Caboolture is also conveniently located on Queensland's main north-south rail link for ease of bulk container freight movement.
- The development of the employment lands at the NEBP will significantly assist the achievement of the then Caboolture Shire Council Corporate Plan and its strategy for self containment. This strategy seeks to achieve a target whereby over the next twenty years, 2 out of every 3 Caboolture workers live and work in Caboolture.
- It is considered that the NEBP would be a unique development which represents a significant upgrade in quality compared to the existing supply of industry/business park floorspace in the northern Brisbane area. It also represents the opportunity to be a leading example at the national level of the change which is occurring in industrial land uses.
- While the proposed business park is planned to be a contemporary facility, much of the existing industrial/business park land uses in the area are more consistent with traditional industrial estates in terms of design, standard of amenity and associated land uses.
- It is considered that traditional industrial land uses generate in the order of up to 40 workers per hectare. In contrast, the employment generated from a contemporary, world class business park facility is anticipated to be much higher. Case studies show in the order of 60-70 workers per hectare and higher in some instances. This effect is due to the higher numbers of employees which would result from the trend towards higher ratios of commercial to non-commercial floorspace in industrial/business parks.
- From the then Caboolture Shire Council's perspective this would indicate that significantly less industrial land would be required to generate considerably higher levels of employment. Therefore, higher employment will be generated as a consequence of a business park land use than would be possible under the traditional industrial estate type land uses.
- The types of industries and businesses considered likely candidates to locate at the proposed business park are marine, biotech, information and community technology and logistics/warehouse industries. Others may include aviation and food related industries.
- The development of the business park is consistent with a number of the key strategic directions that the SEQRP incorporates to manage growth in Southeast Queensland. These key strategic directions include the following:
  - creating a more sustainable future;
  - identifying land to accommodate future growth;
  - promoting land use efficiency;
  - enhancing the identity of regional communities;
  - providing infrastructure and services; and
  - integrating land use, transport and economic activity.
- It is also consistent with a range of the key desired regional outcomes of the SEQRP. These include the following:
  - economic development;
  - industry and business development;
  - Smart State – the promotion of innovation, skills and technology;

  - total water cycle management;
  - environmental values and water quality; and
  - employment and economic activity areas.
- NEBP also responds to a number of other commercial and demographic changes reflecting broader worker needs that have influenced requirements for more diverse land uses in employment areas. These relate to business and employee needs for retail services, accommodation, recreational facilities, and social services.

The balance of the area has been designated as open space and has multiple functions including essential floodplain and stormwater management undertakings along with a mix of recreational activities which retain an open and semi-rural character, and promote locally significant heritage places. Together, these actions are complementary to the marina, residential and MIBA precincts.

The Net Benefit

The net benefit test requires overall social, economic and environmental benefits and costs to be calculated quantitatively and qualitatively.

Economic

The economic benefits generated from the NEBP development are assessed to generally be of high impact, and significantly outweigh the economic costs associated with the development. Key beneficial economic impacts of the NEBP are expected to include:

- the generation of additional employment, during both construction and operation of the NEBP;
- increased tourism visitation and visitor spend, driven by water based tourism opportunities, the development of improved linkages with other water and land based tourism activities in the region; and
- efficiency and productivity gains through clustering and development of the high value marine sector.

Social

The NEBP is assessed to provide a comparatively greater level of social benefit than cost. Key beneficial social impacts of the NEBP are expected to include:

- improved access to affordable public housing through the contribution of $2,000 per parcel sold to a building trust fund for the development of Council owned public housing;
- improved access to areas for recreational and leisure activity though the development of wetlands, pathways, fishing platforms, marina berths, other cultural open space areas and recreational areas;
- improved visual amenity, with improved access to environmental attractions including the Caboolture River and the improvement of current relatively degraded land;
- an enhanced range of housing across the entire housing spectrum; and
- enhancement of community interaction and cohesion, which is important to a well functioning business and residential community and can significantly influence an individual's wellbeing.

Environmental

The environmental benefits accruing from the NEBP development are assessed to outweigh the environmental costs associated with the development. Key beneficial environmental impacts of the NEBP are expected to include:

- protection of 9km of riparian vegetation, that is “significant coastal wetlands”, within the environmental buffer zone in the north eastern section of the development;
- creation of wetlands through active rehabilitation and additional buffering of riparian vegetation; and
- improved water quality through improved site drainage and run-off.

In both quantitative and qualitative terms, the NEBP development, under the ‘total project scope’ and ‘medium scope’ assessment provides a net benefit to the State of Queensland with the benefits of the proposed development exceeding the cost.

The Alternatives

A number of alternatives to the preferred NEBP development were investigated during the design and compilation of the NEBP EIS. The preferred NEBP development proposal is the result of years of design input and consideration of many alternative combinations of the development and locations.

The alternative findings are consistent with those of the Department of Tourism and Regional Development which shows no other site between the Mary River and Brisbane has the characteristics to meet the growing demand of boating registrations in Queensland and sustain the wealth of the marine industry, while enhancing economic, social and environmental values.

The Department has also indicated its support of large self funded developers which should lead to improved facilities, practices and professionalism within the marina industry and also recognizes the planning approval process to manage this demand requires significant overhaul

The Impact

No new impacts as a result of the NEBP development emerged in the production of the Supplementary EIS with the additional assessment reinforcing the overriding need for the preferred NEBP development proposal at the current site.

The Conclusion

It can be concluded that through the Supplementary EIS the Proponent has been provided with the opportunity to demonstrate the developments’ benefit and wider support and its commitment to implementing best practice management measures to achieve the sustainable vision presented in the NEBP EIS.

1. INTRODUCTION

Cardno (Qld) Pty Ltd prepared an Environmental Impact Statement (EIS) dated 31 January 2008 for the Northeast Business Park (NEBP). The NEBP is a multi-use business park and marina concept that will integrate industry, marina facilities, commercial, residential, heritage and recreational open space precincts, and is the creation of Northeast Business Park Pty Ltd (the Proponent). The NEBP development was designated a State significant project under the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and a Terms of Reference (ToR) was issued by the Coordinator General (CG), attached as Appendix A of the NEBP EIS.

NEBP is located on a strategically significant 769 hectare landholding on the southern banks of the Caboolture River at Morayfield, close to the heart of Caboolture. The site has a unique set of strategic attributes, making it an ideal location for an integrated development.

The key features of NEBP as described in the EIS include the following.

- Mixed Industry Business Area (MIBA) - 169 hectares of industry and businesses provided local and regional employment and training opportunities.
- 911 Berth Marina, 300-500 dry boat stacker, and associated Shipyard and Marine Industry Infrastructure, building on Queensland's growing national and international marine industry.
- A Marina Village, accommodating public spaces, cafés, restaurants, public promenades and a mix of villas and apartments.
- Community Facilities, including nodes in the MIBA, residential area, Marina and business facilities.
- Residential Housing areas incorporating a range of housing styles to meet community needs.
- Regional Open/Green Space; approximately 420 hectares of open space, heritage parks, walking tracks, golf course, clubhouse and environment centre.
- Flexibility to respond as demands change over time, with the potential inclusion of retirement living and a primary School.

Figure 1 provides an illustration of the NEBP Structure Plan for easy reference.

The EIS was submitted to the Department of Infrastructure and Planning (DIP), which is coordinating the EIS on behalf of the CG. The EIS was prepared in accordance with Part 4 of the SDPWO Act and was for a period of 45 days available for public and advisory agency review.

During the public consultation period, which closed 4 April 2008, a total of 29 submissions were received, of these the 14 were from Government agencies and 15 from private individuals. This is considered to be a direct result of the extensive consultation undertaken during the EIS preparation and the significant attention to environmental responsibility by the Proponent.

On 18 June 2008 the CG requested further information to satisfactorily address the submissions prior to the final evaluation of the EIS. This information requested supplementary information in consultation with advisory agencies pursuant to section 35 of the SDPWO Act. Following review of supplementary information provided by the Proponent, the CG will prepare a report to communicate conclusions reached on the environmental effects of the project. Further information on the EIS process can be found in Section 1.4 of the NEBP EIS.

The NEBP EIS was in a format which mirrored the ToR and included a description of the findings of the key technical studies commissioned to assess the potential impacts of the proposed NEBP. Key technical studies were presented as Appendices to the EIS and the qualifications and experience of the Study Team was specifically detailed in Appendix B1 of the NEBP EIS.

This Supplementary EIS will specifically respond to the issues raised in the submissions and incorporates the contributions of the Study Team. Where new technical studies have been undertaken to address new issues, these have been appended to this Supplementary EIS. Any revisions or addendums to existing reports to address key issues have also been appended to this Supplementary EIS to provide a cohesive submission response summary.

As this Supplementary EIS responds to key issues raised in submissions, it should be read in conjunction with the NEBP EIS to provide a full description of the NEBP development impacts and benefits. The NEBP EIS remains available for viewing from the Proponent's web site:

www.northeastbusinesspark.com

The technical studies which were commissioned to assess the potential impacts of the proposed NEBP as required by the key issues within the submissions are listed in Table 1 below. Table 1 also indicates which technical studies are additional to that provided in the NEBP EIS (i.e. supplementary) and which are revisions. This is to assist the regulatory bodies in processing all of the available information.

Table 1 Supplementary EIS List of Appendices

Status	Title	Author	Date	Appendix Reference
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Supplementary	Environmental Monitoring Program	Cardno Environment	July 2008	**I**
Supplementary	Declared Fish Habitat	Cardno	July 2008	**J**

Status	Title	Author	Date	Appendix Reference
	Area Revocation Support Study	Environment		
Supplementary	Vegetation Offsets Proposal	Greening Australia	February 2008	**K**
Supplementary	Community Consultation DVD	NEBP Pty Ltd		**L**

The Supplementary EIS sufficiently addresses the submissions and will, in addition to the information contained within the NEBP EIS, enable regulatory bodies to make an informed decision on the application for preliminary development approval for the NEBP project and in cases, subsequent development approval applications.

2. KEY ISSUES

A review of submissions received during and after the public consultation period was undertaken which identified a number of issues.

The major issues were those key issues identified in multiple submissions and can be described by the following key topics consistent with the ToR.

1. Strategic Justification.
2. Matters of National Environmental Significance.
3. Land - Transport (State- and local-controlled Roads).
4. Water Resource (Flooding and Stormwater Quality and Infrastructure).
5. Coastal Environment – Coastal processes (Navigational Dredging, Hydraulics, Geomorphology, Riverbank Erosion, Nature Conservation, Dredge Spoil Pipeline, Long-term Dredge Spoil Disposal and Dredging Responsibility).
6. Environmental Monitoring.

Minor issues were identified as those raised in single submissions and described by the following key topics consistent with the ToR.

1. Water Resources (Water supply).
2. Land (Acid sulfate soils, Landscape Character & Visual Amenity).
3. Nature Conservation (General Habitat).
4. Social Impacts.
5. Health and Safety.
6. Environmental Management.

It is highlighted that a number of submissions were positive and did not raise any issues.

Additionally seven submissions were not properly made due to their submission to Moreton Bay Regional Council (then Caboolture Shire Council) instead of to the CG. Nevertheless, these submissions have been addressed in this Supplementary EIS at the request of the CG.

3. RESPONSES TO ISSUES

3.1 Strategic Justification

A Supplementary Planning Report (Conics, July 2008), presented as Appendix A to the Supplementary EIS, provides clarification regarding the intent and details of planning related aspects of the NEBP development. It is contended that the NEBP proposal has successfully addressed all relevant aspects of planning consideration and so is presented as a signature project for the consideration and approval by the CG and the Moreton Bay Regional Council (MBRC) as it will deliver for the Caboolture community, SEQ and the State the greatest net benefit of all viable alternatives.

3.1.1 South East Queensland Regional Plan

The NEBP EIS addressed the South East Queensland Regional Plan (SEQRP), particularly in Appendix C2 (the NEBP Planning Report), specifically at section 8.1 and in Appendix J, by providing:

- the project's statutory position in relation to the South East Queensland Regional Plan (SEQRP);
- the project's consistency with the SEQRP, Desired Regional Outcomes (DROs), principles and policies; and
- the project's consistency with the Regulatory Provisions, despite being exempt from the SEQRP.

A Supplementary Planning Report has been prepared by Conics to support the NEBP Supplementary EIS in response to submissions which failed to acknowledge that the development is exempt from the Regulatory Provisions of the SEQRP. This Supplementary Planning Report is presented as Appendix A.

Section 3.0 of Appendix A addresses the Project's consistency with the SEQRP, and confirms the findings of the Planning Report, provided as Appendix C2 of the NEBP EIS (section 8.1) that:

- the project is exempt from the Regulatory Provisions as it pre-dates the SEQRP, but nonetheless satisfies the tests of the Regulatory Provisions; and
- the project is consistent with the Regional Plan, DROs, principles and policies and the policy intents for the applicable land use categories.

The NEBP Planning Report addressed at length the locational requirements of the proposal and its overriding need at the subject location. Also noted was the significance of the NEBP project to the region, demonstrated in the original net benefit assessment attached as Appendix D of the NEBP EIS and revision attached as Appendix B, and the robust nature of the assessment process to which the NEBP is subject.

In particular the following is highlighted.

The Southern Regional District of the Department of Infrastructure and the Moreton Bay Regional Council (MBRC) has accepted the marina location outside the urban footprint given the overriding need for a marina (and marine industries) in Southeast Queensland. This is discussed further in section 3.1.2.1 of the Supplementary EIS and in detail in Sections 2 and 3 of Appendix A.

Other urban uses outside the urban footprint, according the NEBP Structure Plan, include residential and open space precincts. The residential precincts as proposed provide a supporting residential population which contributes to the vitality and viability of the

commercial aspects of the marina precincts and provide the population base load required to support the provision of public transport and community services necessary to ensure that the MIBA Precincts are an attractive 21st Century employment centre. The need for residential land is discussed further in section 3.1.2.3 of the Supplementary EIS and Section 4 of Appendix A.

The balance of the area outside the Urban Footprint has multiple functions including essential floodplain and stormwater management undertakings along with a mix of open space recreational activities which retain an open and semi-rural character. Together, these actions are a mix of urban and semi-urban functions which by their nature are not required to be located within the Urban Footprint. Whilst it is recognised that recreational uses are an "urban activity" as defined by the SEQRP Regulatory Provisions, the recreational uses proposed are complementary to the underlying floodplain role of the Open Space Precincts, and provide an active use for the areas that assists in the management of the land and opportunities for public access to the Caboolture River and locally significant heritage places. The need for open space land is discussed further in section 3.1.2.4 of the Supplementary EIS and Section 9 of Appendix A.

In summary, technical reports provided in support of the NEBP strategic justification are tabulated below and should be referred to when making an informed decision regarding the NEBP development proposal.

Table 2 Strategic Justification EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	NEBP Planning Report
NEBP EIS	Appendix C3	NEBP Area Plan
NEBP Supplementary EIS	Appendix A	NEBP Supplementary Planning Report

3.1.1.1 The Net Benefit Approach

The underlying principle and approach adopted in the design and conceptualisation of the NEBP development has been to provide clear net environmental, social and economic benefits within the development and to the region and the State.

Appendix C2 of the NEBP EIS documented how and why the current proposal sought to achieve very substantial net benefits – both by descriptive means as well as by the objective methodology prescribed by the Environmental Protection Agency.

The net benefits are specifically addressed in the Net Benefit Assessment prepared by the AEC Group, and included as Appendix D of the NEBP EIS. The focus and scope of the Net Benefit Assessment was detailed in that report, including the approach and decision criteria to determine net benefit.

NEBP has been designed as a master-planned community with careful regard placed on the size, location and inter-relationship between uses. The design ensures that each use supports the successful operation of the other uses, and that the location responds to the natural features of the site. Further, the mix of land uses has been designed in the context of the surrounding locality and region such that the development itself supports the successful functioning, growth and identity of the region. An integrated approach to master-planning is a key benefit of the development, noted as a fundamental goal and tenet of town planning and urban design.

Accordingly, the removal of any substantial elements of the development cannot be undertaken in isolation without due consideration to the positive or negative effects that such an alteration will have on the rest of the development or to the wider community.

A revised Net Benefit Assessment has been prepared by AEC which supersedes Appendix D of the NEBP EIS, and which provide further justification in support of the integrated master plan that is the NEBP development proposal and in response to submissions. The revision was undertaken using methodology consistent with that described in Appendix D of the NEBP EIS with outcomes presented below.

Key Quantitative Impacts

Total Project Scope Impacts

The indirect cumulative net present value (i.e. that flowing to external stakeholders other than the proponent) generated by the NEBP under the total project scope is positive at over $2.3 billion for the length of the analysis (6.0% real discount rate) for the total project scope.

The direct benefit to the proponent over the same period whilst positive and significant is less at approximately $174 million net present value (10.0% real discount rate).

In quantifiable economic terms, the NEBP development, under the 'total project scope' assessment provides a net benefit to the State of Queensland with the benefits of the proposed development exceeding the cost.

Medium Project Scope Impacts

The indirect cumulative net present value (i.e. that flowing to external stakeholders other than the proponent) generated by the NEBP under the medium project scope is positive at over $928 million for the length of the analysis (6.0% real discount rate) for the total project scope.

The direct benefit to the proponent over the same period whilst positive and significant is less at approximately $82 million net present value (10.0% real discount rate).

In quantifiable economic terms, the NEBP development, under the 'medium scope' assessment provides a net benefit to the State of Queensland with the benefits of the proposed development exceeding the cost.

Key Qualitative Impacts (Total Project and Medium Scope)

Economic

The economic benefits generated from the NEBP development are assessed to generally be of high impact, and significantly outweigh the economic costs associated with the development. Key beneficial economic impacts of the NEBP are expected to include:

- the generation of additional employment, during both construction and operation of the NEBP;
- increased tourism visitation and visitor spend, driven by water based tourism opportunities, the development of improved linkages with other water and land based tourism activities in the region; and
- Efficiency and productivity gains through clustering and development of the high value marine sector.

By comparison, two key economic costs were identified as a result of the NEBP:

- the additional infrastructure costs such as roads, water, wastewater, gas, electricity and ICT, to meet the needs of the residential and business populations of the NEBP; and
- the cost of additional social and community infrastructure required to meet the additional population such as a range of civic, community, human services, recreation, health and education facilities.

Social

The NEBP is assessed to provide a comparatively greater level of social benefit than cost. Key beneficial social impacts of the medium scope assessment for NEBP are expected to include:

- improved access to affordable public housing through the contribution of $2,000 per parcel sold to a building trust fund for the development of Council owned public housing;
- improved access to areas for recreational and leisure activity though the development of wetlands, pathways, fishing platforms, marina berths, other cultural open space areas and recreational areas;
- improved visual amenity, with improved access to environmental attractions including the Caboolture River and the improvement of current relatively degraded land;
- an enhanced range of housing across the entire housing spectrum; and
- enhancement of community interaction and cohesion, which is important to a well functioning business and residential community and can significantly influence an individual's wellbeing.

By comparison, key social costs expected to be generated through the development of the NEBP include:

- increased demand for accommodation and housing during operation of the development, impacting on an already tight property market; and
- increased demand for community services and facilities as a result of the anticipated high level of relocation of employees and their families to the region, with an anticipated direct increase in employment of just over 14,000 on completion of the development.

One social impact, 'river safety', has both positive and detrimental impacts. River safety is improved by dredging activities undertaken to deepen navigation channels, education programs run by the proponent at NEBP, the continuation of the reduced speed zones, as well as the incorporation of additional lit navigation beacons. Negative impacts on river safety potentially result from the increased number of boats potentially utilising the Caboolture River. On balance, the overall impact on river safety due to the proposed NEBP development is identified to be neutral as positive impacts are assessed to equal costs (2 to –2) for both the total project and medium scope.

Environmental

The environmental benefits accruing from the NEBP development are assessed to outweigh the environmental costs associated with the development. Key beneficial environmental impacts of the NEBP are expected to include:

- active rehabilitation of wetlands degraded by past land use practices (e.g. farming and forestry) on the site, and additional buffering and protection to the "significant coastal wetlands" protected within the environmental buffer zone in the north eastern section of the development; and
- improved water quality through improved site drainage and run-off.

By comparison, while a number of negative environmental impacts were examined only one key environmental cost was identified, with the potential for the development to increase the risk of general water pollution due to increased water traffic. The marina lock facility would ensure any spills or leaks within the marina were contained and managed within the precinct.

Three environmental impacts were identified to have both positive and negative impacts. In terms of net position with specific environmental considerations, the following can be noted.

- On balance the overall impact on water quality due to the proposed development is assessed as positive with benefits outweighing costs 7 to –5. Impacts improving water quality on the downstream environments of state significance are the use of recycled water, improved water quality (site run-off) and improved water quality (boat operator education and facilities). Potential Negative impacts on water quality are exposure of acid sulfate soils & nutrient load to waterways, dredging the river mouth, storm water run-off and site drainage and general water pollution. Each of these potential effects would be addressed by a rigorous environmental plan, as outlined in Appendix I of this Supplementary EIS.
- On balance the overall impact on bank erosion is assessed as being substantively as positive with the benefits outweighing the costs 5 to –1. Bank erosion impacts would be addressed by improving riparian vegetation and creation of wetlands (environmental protection and maintenance of downstream riparian zones). Negative impacts on bank erosion will be from increased river traffic.
- All of the costs and benefits in both the 'total project scope' and 'medium scope' assessment relate to impacts on downstream wetland health (wetlands of state significance). On balance the impact on wetland health is positive with benefits outweighing costs 18 to –8 in the 'total project scope' assessment and 15 to –8 in the 'medium scope' assessment.

In qualitative terms, the NEBP development, under the 'total project scope' assessment provides a net benefit to the State of Queensland with the benefits of the proposed development exceeding the cost.

In qualitative terms, the NEBP development, under the 'medium scope' assessment provides a net benefit to the State of Queensland with the benefits of the proposed development exceeding the cost.

In summary, technical reports provided in support of a net benefit and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 3 Net Benefit EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix D2	Net Benefit Assessment, January 2008
NEBP Supplementary EIS	Appendix B	Net Benefit Assessment, July 2008

3.1.2 Land Use Pattern and Intensity of Development

Responses to the provisions of the Planning Scheme and Overall outcomes are contained in Section 8.4 of the Appendix C2 of the NEBP EIS. It is contended that the development meets the higher order goals of the Planning Scheme, creating employment and an integrated master planned community and that the proposal achieves the overall strategic

objectives of the Planning Scheme substantially better than development attainable directly under current zoning and development intent provisions.

However the extent of non compliance with the Planning Scheme, and by extension, the development outside the Urban Footprint, has arisen due to the fact that Council did not have sufficient opportunity to contemplate a proposal of the current nature. Accordingly, it is natural that some elements of the proposal do not comply with aspects of the Scheme such as, say, intent of the Rural zone, as a proposal of this nature had not been envisaged at the time. Accordingly, the application seeks to override the Scheme.

Section 4.0 of the Supplementary Planning Report, presented as Appendix A, considers planning intents for the uses sought and the site, addressing:

- the lack of alternative regional locations for a marina and marine industry cluster due to environmental and land use integration reasons (also considered in the NEBP EIS Appendices E6-E7); and
- differing options for the configuration of the development, again demonstrating that the net benefits achieved by the NEBP as proposed provide the greatest community benefit (as previously considered at Section 5.3 of the Planning Report).

3.1.2.1 Marina Demand

Information was provided in Sections 2 and 3 of the NEBP EIS which demonstrated marine and marine industry demand, through the net benefit assessment and marina demand assessments by Pacific Southwest provided as Appendix E7 and E8 of the NEBP EIS. In addition to the above demand assessment, both government and community support have been established for a marina at the current location.

Section 5.5 of the Planning Report, provided as Appendix C2 of the NEBP EIS, considered a range of alternative development scenarios along with alternative locations for a marina development. This consideration of alternatives also compared the relative merits of a "compliant" scheme reflecting a proposal directly in accordance with the existing zoning and planning scheme provisions.

Government Support

The continued growth in the marine sector and its importance as a key industry has led to its recognition as such by all levels of Government. Examples of some of relevant initiatives are listed below.

Australian Marine Industry Action Agenda

The Australian Government Department of Innovation, Industry Science and Research has created a Marine Industry Action Agenda to help foster industry leadership and help the marine industry develop growth strategies.

Queensland Smart Industry Policy

In Queensland, the State Government has identified the Marine Sector as one of 15 priority sectors identified in Queensland's Smart Industry Policy.

Marine Sector Action Plan

In accordance with this policy Department of Tourism, Regional Development and Industry has developed a Marine Sector Action Plan providing an overarching framework to help support the continued development of the Marine Sector in Queensland.

We note that one of the key actions contained in that strategy is "*engaging with proponents to develop environmentally sustainable marine infrastructure projects throughout the State in order to service current demand and identified sustainable growth.*"

Queensland Manufacturing Strategy

The identification of the marine industry as a priority sector within the Queensland Government's Manufacturing Strategy, *Making Queensland's Future.*

Moreton Bay Regional Council

The MBRCl has also recognised the importance of the marine industry to the region. This has been specifically identified in:

- the Economic Development Action Plan 2004- 2008;
- the Caboolture Places for Business and Industry report, April, 2007.

Both the above reports identified the Caboolture River as the likely/preferred location for a marina and marine industries precinct.

The following submission on the review of *hot spots* for regulatory reform was obtained from the Marine Industries Sectoral Development, a Department of State Development, Trade and Innovation which supports the NEBP development proposal.

> ***Demand for boats and consequently marina berths have risen in Queensland faster than the population growth rate. This is largely due to the increases in wealth in Australia in the last 10 years. Although the number of boats registered in Queensland has been increasing rapidly in the last few years, the capacity to berth these larger boats has progressively fallen behind, artificially inflating the cost of berth rental and purchase (due to demand outstripping supply).***
>
> ***Many marinas have ceased maintaining lists of clients looking for berths once the numbers recently passed 1500 across the state. There is anecdotal evidence that this unsatisfied demand for berths is impacting not only on affordability of obtaining a berth but also new boat sales. The choice to buy particular class of vessel may depend upon capacity to berth that boat and Queensland manufacturers dominate the market in question –medium-sized (6 metre plus) luxury recreational boats.***
>
> ***There is also evidence that the marine infrastructure limitations are impeding the natural growth of the burgeoning super yachts market. These large luxury vessels generate more than $100 million annually for Queensland in terms of refit, maintenance and provisioning, with enormous growth potential with their commensurate significant employment and revenue generation spin off benefits.***
>
> ***The Boating Industry Association of Queensland (BIAQ) has conducted research (supported by Queensland Transport recreational boating registration statistics) which clearly show an on-going growth in vessel registrations of 6% per annum with even higher growth rates in the greater than 10 metre category. At this rate, the whole of Queensland will need to double its entire berth capacity in under 12 years. Knowing that individual marinas have***

taken over 10 years to go from planning to operational berths, it is essential that clear consideration be given to the proposal.

The migration from the southern states includes a very significant proportion of baby boomers with money to spend and invest. They are attracted to Queensland for its lifestyle and quality of life. It is important to note that the current 'Invest Queensland' brand highlights marine activities as part of the quality of life model. This in turn, justifiably, is used as evidence that Queensland leads Australia in terms of attracting and retaining the very best workforce. If we are not able to assure these "well heeled" new comers of berthing and other facilities for the lifestyle they seek, our image will be tarnished, we will lose significant economic inputs and the capacity to provide the quality of life and jobs that we need to sustain the current growth.

Recent feedback indicates that some stakeholders, including Government agencies, view the vessel berth issue as unique to the wealthy elite. This is an incorrect assumption given that the profiles of people and vessels which require berths, include those people who simply don't have sufficient storage space elsewhere such as at home; those who choose not to tow their vessels on roads; moderately priced yachts, older bay cruisers; mid-market cruisers both old and new; and most yachts as well as the luxury vessel market. This incorrect assumption therefore may be impacting upon the objectivity of agencies when dealing with marine infrastructure development issues. It is important to note that the demand for berths is from a much wider market and has far wider implications than accommodating those fortunate owners of luxury vessels. Increasingly these boat owners represent business and investment opportunities for the State. They are often employers of Queensland workers. The permanent berthing and visitation by large vessels has significant flow on benefits to Queensland's marine services sector. Finally, our brand as a growth State is centred on quality of life that supports the attraction and retention of a world class workforce.

It also should be noted that marinas bring with them services and facilities which extend far beyond those available to berth owners. For example, public boat ramps, secure parking facilities, locations for yacht, boat and marine rescue clubs, recreational opportunities and places catering for day trip visitors.

The BIAQ and members represented in this submission know that the additional infrastructure can be put in place sustainably, can be planned and operated at net environmental benefit and can certainly add enormously to the economic boon that is with us currently.

Community Support

An extensive community engagement exercise was undertaken between October 2007 and the present day. Appendix G of the NEBP EIS details community engagement and ultimately the community support which relates to marina demand.

By the close of the EIS process (lodgement) community issues and support for the project had been clearly identified through the exercise, including community views regarding the desirability and overriding social need for the marina and associated marina industrial development. The community consultation program engaged with a broad stakeholder

base including local community members, interest groups, recreational angling and boating users, local businesses, the boating business and building community and Sanctuary Cove Boat Show attendees.

The desirability of NEBP as a landmark destination because of its proposed marina amenity was clearly identified at all consultation and community engagement activities such as community information days, face to face consultation, site tours, on river consultations and written feedback including attitudinal surveys.

Details of the consultation process have been specifically referenced in Appendix G of the NEBP EIS within chapter 3 pp 132, chapter 4 pp 329-340 and chapter 5 pp 360-374.

Key responses included the following.

- Project benefits outnumbered project limitations by almost 5 to 1 and the great majority of the overall comments reinforce this high degree of local support.
- A total of 362 statements of support were recorded as part of the consultation program.
- 47% of community information day attendees identified marina and recreational life style as the top positive benefit.
- 16% of community information day respondents stated that tourism would be enhanced and the regions profile would be enhanced.
- 94.5% of surveyed recreational anglers and boating community stated that the proposed marina, if managed well will be advantageous to the region.
- 100% of all anglers consulted agreed that shore angling in a dedicated area for fishing on the bank near the entrance to the marina would be beneficial and would provide access to the Caboolture River which has been difficult, and would be good for the area.
- Attitudinal survey respondents ranked demand for marine industry repair facilities as mean average 6.9/10 and a yacht club ranked as mean average 7.6/10 (third and fourth highest amenity/business sector demand by respondents).

The top five benefits identified by the respondent community during the consultation identified the marina concept as a high priority stating. The marina would:

1. enhance social cohesion and improve community identity (36%);
2. improve the natural environment (27%);
3. increase employment in the region (18%);
4. bring economic benefits to the region (14%); and
5. improve recreation and leisure activity in the region (5%).

Desirability and overriding social need for the marina and associated marine industrial development was also identified as highly beneficial by the respondent community including the business community who identified destination place and economic benefits resulting in the development of the marina and mixed industry business use as a positive benefit to the region. General comments included perceptions that the marina development would put Caboolture “on the map”.

Letters of support from marine industry providers are also tabled in the Caboolture City Marina Study, presented as Appendix E7 of the NEBP EIS. Details of the consultation of marine industry stakeholders are detailed pp 28–39 of that report. Commercial and club marina stakeholders consulted included:

- Brisbane Marine Industry Park (BMIP);
- Gold Coast City Marina;
- Horizon Shores Marina;
- Hope Harbour Marina;

- Kawana Waters Marina;
- Manly Boat Harbour which incorporates four marina complexes of
    - East Coast Marina
    - Moreton Bay Trailer boat club (MBTBC)
    - Royal Queensland Yacht Squadron (RQYS); and
    - Wynnum Manly Yacht Club Marina;
- Marina Mirage;
- Mariners Cove Marina;
- Mooloolaba Marine Wharf Complex;
- Mooloolaba Yacht Club;
- Newport Waterways Marina;
- Noosa Harbour Marine Village at Tewantin;
- Rivergate Marine and Industry Park;
- Runaway Bay Marina;
- Sanctuary cove Marina;
- Scarborough Marina;
- Southport yacht club; and
- Spinnaker Sound Marina.

Discussions with marina operators and the Boating Industry Association of Queensland advised that there was a waiting list for all marina berths in Queensland (January 2005) as follows:

- 795 waiting to buy; and
- 685 waiting to lease.

Local Marine Industry Business Operators were consulted throughout the EIS process.

Operators included:

- Albo Marine Pty Ltd;
- Boalworx Marine Service;
- Bribie Pontoons/Vasard Marine Pty Ltd;
- Linco Manufacturing (bought out by Higwood Anchors);
- Hi-Ryder Boats Pty Ltd;
- Kavlacat Power boats Australia;
- Noble Engineering;
- Power Cat Marine Pty Limited;
- South Pacific Marine Pty Limited;
- Tara Industries Pty Ltd; and
- Winning Yachts Pty Ltd.

The Marine Industry stakeholders were invited participants in three business sector consultations with detailed contacts and responses provided in chapters 3 and 4 of Appendix G of the NEBP EIS.

In summary, technical reports provided in support of a marina demand and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 4 Marina Demand EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	Planning Report
NEBP EIS	Appendix E7	Caboolture City Marina Study
NEBP EIS	Appendix E8	Caboolture City Marina Demand Update
NEBP EIS	Appendix G	Community Consultation Report
NEBP Supplementary EIS	Appendix A	Supplementary Planning Report
NEBP Supplementary EIS	Appendix B	Revised Net Benefit Assessment

3.1.2.2 Residential Demand

The combination of the clarified and additional factors described in detail in Section 4 of Appendix A of the Supplementary EIS, compared to the NEBP EIS, demonstrates that there is a compelling argument for inclusion of the residential component in NEBP, in general accordance with the extent and density proposed. In summary these reasons are:

- residential development provides the necessary base load of people helping the rest of development fulfil it's potential, maximising net benefit to the region;
- the population of the Caboolture and MBRC area is growing, requiring additional land to be allocated for residential development;
- the SEQ region is experiencing an undersupply of significant residential release areas, affecting housing affordability;
- the Caboolture region is heavily fragmented, making it difficult to create major residential developments;
- the NEBP is a large site in single ownership, able to be efficiently connected to infrastructure, link with centres and employment, education and training and recreation areas and better paced as a residential release area than any other site not currently designated for residential;
- the population is aging and household sizes are decreasing. NEBP provides a high percentage of apartments and smaller household forms, as well as retirement living options, helping to address these demographic changes;
- the population base proposed provides the critical population mass for a Primary School, which is major community foundation, helping NEBP to be relatively self contained, providing a valuable addition to the existing, relatively isolated areas of Burpengary East and avoiding unnecessary traffic and student population pressure on existing primary Schools;
- the population base helps support the viability and service frequency of public transport provision.

The extensive consultation engagement found the residential land use component of the NEBP will uniquely satisfy the community's needs and demands in a multitude of ways.

The community's residential needs will be met by NEBP in a number of ways by providing a development which:

- services the residential needs of a growing population;
- creates a sustainable master planned community;
- offers a mix of residential product;
- provides dwellings for the over 55 age cohort; and

- achieves desirable economic and social outcomes.

Growing Population

Population growth is an overall driver of residential dwelling demand. This increased population has increased residential land needs. The study area population is forecast to grow from 297,675 residents in 2006 to approximately 440,500 people by 2026, representing an average annual growth rate of 2.0% or 7,130 residents per year.

The Over 55's Age Cohort

NBP will provide accommodation solutions to the residential needs of the study area residents aged 55 years and over. Those residents aged 55 years and over are forecast to increase at a far greater rate than the rest of the study area population. In 2006 72,549 study area residents were aged 55 years and over, representing 24% of the total population. This is forecast to increase to 30% in 2016 and 34% by 2026.

More Recent Population Projections

The 2026 estimated population for the study area population provided by the SEQRP 2005-2026 Amendment 1 is 440,500 people. However, according to the more recent projections presented as part of the SEQ Council of Mayors/OUM Forecasting Project, this figure is now expected to be 488,604 - an increase of 48,104 people over and above the previous SEQRP projection. In response to this population increase, the question is raised as to whereabouts will this increase will be accommodated within the study area?

Residential land uses at NBP represents an excellent opportunity to accommodate the needs and demands of a share of the study areas growing population which is now projected to be 488,604 including this additional 48,104 people by 2026.

New Multi-Unit and Attached Dwelling Needs

According to the SEQRP Amendment 1 a total of 18,700 new infill dwellings are expected to occur in the study area between 2004 and 2026. The study area is expected to receive approximately 16,200 infill dwellings from 2007 to 2026. The proposed development represents approximately only 7.0% of the expected multi-unit residential development that will occur over the next 20 years.

However, according to the SEQ Council of Mayors/OUM Forecasting Project a total of 23,042 additional attached dwellings will be required over the period 2006-2026. Incorporating a straight line growth rate suggests that an additional 21,890 attached dwellings will be required from 2007 to 2026 in the study area - an increase of 5,690 attached dwellings over and above the previous SEQRP projection.

Residential land uses at NEBP represents an excellent opportunity to accommodate this increase in attached and multi-unit dwelling need and demand.

New Detached Dwelling Needs

The SEQRP estimates a total of an additional 43,800 separate dwellings will be required over the period 2004-2026. The study area is expected to receive approximately 37,810 separate dwellings from 2007 to 2026 using a straight line growth rate approach. Approximately 1,300 separate dwellings are anticipated as part of the NBP proposal. Hence, the proposed development represents approximately only 3.4% of the expected separate dwelling development that will occur over the next 20 years.

However, according to the SEQ Council of Mayors/OUM Forecasting Project an additional 56,914 detached dwellings will be required over the period 2006-2026. Incorporating a

straight line growth rate suggests that an additional 54,068 separate dwellings will be required over the period 2007 to 2026 in the study area - an increase of 16,258 separate dwellings over and above the previous SEQRP projection.

Residential land uses at NEBP represents an excellent opportunity to accommodate this increase in demand and need for attached dwellings.

Location and Affordability Residential Matters

An important consideration relates to location and affordability matters arising from the development scenario in which NBP only develops the business park component within the urban footprint.

With employment generation comes additional residential needs and demand. However, in contrast to NEBP's existing development proposal, if only the business park element of the development were to proceed, serious questions arise which include:

- where to locate this additional residential product to accommodate the needs of workers/business owners; and
- the potential for this type of approach to negatively impact on housing affordability in the local area.

Mixed Residential Product Needs

There is a mixed offering of residential product at NEBP. This will assist to satisfy the varying residential needs and demands of the community. The provision of a range of residential product types includes a total of 927 low, medium and high rise apartments with a further 85 water villas and 120 resort apartments to be developed on the site and sold as strata title tenure. An additional separate housing component is also provided. This is in the order of 1,300 separate dwellings. In total approximately 2,430 dwellings are proposed in the development.

Multi-unit Dwelling Needs

There is compelling evidence of growing demand and need for multi-unit dwellings in the study area (study area includes Caboolture local government area (LGA) excluding the statistical local areas (SLA) of Caboolture (S) – Pt B, and Caboolture (S) Bal in BSD; the Pine Rivers LGA excluding the Pine Rivers (S) – Bal SLA; and the Redcliffe LGA).

The Attached Dwelling Demand assessment, presented in Appendix E2, showed that the study area's proportion of attached (and semi detached) new dwelling approvals grew from 12.2% in 1996/97 to 26.0% in 2005/06.

The total study area's attached (and semi detached) dwelling needs have increased from averaging 360 New Dwelling Approvals (NDA's) per year from 1996 to 2001 to averaging almost 630 NDA's per annum for the 2001-06 period. This shows an increase in residential dwelling needs to the order of 75% over the previous 5 year period.

The growing residential needs and demands specifically for the 55 years and older cohort and the population in general (0 to 55 years) will be responded to by the residential product offered at NEBP. Due to the fact the study area is a coastal region and benefits from relatively high levels of amenity (waterfront, golf courses) and the natural increase of people living in higher density residences, it is estimated that in 2007 approximately 20% of residents aged 55 years and above will choose to live in attached dwellings, whilst 12% of people aged 0 to 55 years will live in attached dwellings.

Changing Household Size

There is an established trend in the study area of decreasing household size. When projected, this translates into increased need and demand for attached and multi-unit dwellings. Total household size for multi-unit dwellings in 2001 was 1.66 people per dwelling, whilst for all dwellings it was 2.54 persons per dwelling. Average household size in the study area has decreased at a rate of 0.7% per annum over the last 10 years. It has been forecasted that this trend will continue and average household size will decrease by 0.1 persons per household every 10 years. NEBP's supply of mixed residential product including 1,130 attached and multi-unit dwellings represents part of the study area's solution to the changing nature of household size.

Economic Outcomes

NEBP will create and combine individual industries, communities, employment opportunities and leisure pursuits in such a way that the combined integrated development will contribute more to the community than the sum of the individual parts.

A key objective of Caboolture's Economic Development plan is the creation of employment and the self containment of those jobs with 2 out of every 3 new employees living in the Shire. Global, National and Local commercial and industrial companies will make NEBP the location of their latest facilities providing employment opportunities for approximately 12,000 jobseekers during the construction phase and additional 14,000 permanent employees regionally.

The provision of residential product in close proximity to the employment lands represents a unique opportunity to reduce the current exodus of workers who commute out of Caboolture daily.

While the NEBP represents a high quality, integrated mixed use development, the significant sustainable benefits of living in close proximity to the work place would be lost to the region under a development proposal which did not incorporate these key components located outside the urban footprint This loss would be due to the considerable reduction of the live-work-play attribute and the combined precinct potential to serve as an attractor for industrial, commercial and recreational land uses. In addition such a proposal without these residential and other key land use components would lose the opportunity to promote Caboolture's role and function in Southeast Queensland.

Social Outcomes

NEBP will take the best concepts from around the world and apply them to a large and unique development site to create a world class residential community. This community is anticipated to be in excess of 8,000 permanent residents.

This will be achieved firstly through excellence in the execution of each individual precinct and secondly by providing excellent infrastructure (physical and social) that links precincts together.

The project aims to be attractive to a wide cross section of residents through the provision of multi level apartments, low rise apartments and both small and large housing blocks for single dwellings. NEBP will present an excellent opportunity in Queensland for the resident seeking to work from an attractive home environment and that can also house marine leisure craft locally.

Social infrastructure will be provided in unison with Caboolture City, whether it is provided for facilities on NBP or in a way that contributes to the expansion of off-site facilities.

Transportation links will ensure residents and the workforce will be integrated into the Caboolture community and access to NBP from rail and bus links is integrated into the local public transportation infrastructure.

It is submitted that the residential development areas of the NEBP present the best located and most obvious extension to residential development in the Caboolture area. No other potential development sites exist within the Urban Footprint capable of supporting master planned development of this nature.

In summary, technical reports provided in support of residential demand and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 5 Residential Demand EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	Planning Report
NEBP EIS	Appendix E1	Economic Benefit Assessment
NEBP EIS	Appendix E2	Attached Dwelling Demand
NEBP EIS	Appendix F	Community Context Study
NEBP EIS	Appendix G	Community Consultation Report
NEBP Supplementary EIS	Appendix A	Supplementary Planning Report
NEBP Supplementary EIS	Appendix B	Revised Net Benefit Assessment, July 2008

3.1.2.3 Employment Land Demand: MIBA and District Industry

The provision of a regionally significant MIBA development is the central focus of the NEBP proposal.

The requirement for the development of the District Industry zoned land as a MIBA is discussed in Appendix C2 of the NEBP EIS at section 5.1.3 Need for the Business Park, 5.2 Economic Benefits and 5.5 Project Alternatives and 'Compliant Scheme' comparison.

Further information in support of a MIBA precinct at the locality is provided hereafter and can be grouped into the following sub topics simply as:

- An analysis of industrial / MIBA supply; and
- A discussion on MIBA characteristics and drivers including:
    - Changing needs of Business Operations
    - Case studies of relevant MIBA developments; and
    - The opportunity presented by NEBP.

Industrial/MIBA Supply

Appendix A of the NEBP Supplementary EIS provides an analysis of Urbis information and does justify the MIBA precinct by providing:

- MIBA land estimation available in Southeast Queensland and the shortages thereof;

- case study insights into Metroplex and Norwest as evidence of successful MIBA examples and their key characteristics;
- concepts of employment lands;
- planning perspectives into MIBA's;
- economic and social needs; and
- evidence of local government authorities incorporating the market demand for business and industry uses into planning schemes.

MIBA Characteristics and Drivers

The Business Park Assessment, presented as Appendix E3 of the NEBP EIS, highlights the evolution in the way that businesses operate with significant change occurring in the last ten years as a result of advances in technology and information systems. This factor is recognised in the Sydney Metro Strategy which notes that more computer based production processes and better logistics and inventory controls are leading to reductions in shop floor workers and more office based employees. Associated with this is the trend towards operational consolidation where businesses consolidate their operations at a single location combining head office, back office, manufacturing and distribution activities. In Southeast Queensland, examples of this include Sealy Posturepedic at Wacol, Queensland Newspapers at Murarrie and Toyota at Acacia Ridge in Brisbane.

A key finding of Urbis research in this area is the increasing demand for office space in conjunction with industrial space in traditional industrial areas. This is not only within the same buildings but also as stand alone facilities that benefit from the synergies of being co-located with industrial uses. The recently developed Quad Park in the traditional industrial precinct of Homebush, Sydney, incorporates tenants with virtually 100% office space with supporting retail facilities. Norwest in Sydney's Baulkham Hills incorporates a mix of tenants ranging from 20% to 100% office space.

These major changes in land use requirements are not restricted to Sydney. In Melbourne the Axxes Corporate Park recently incorporated a range of 100% office tenants over a 6 month period to move from a 40%/60% office/industrial mix to a 50%/50% mix. Com Park at Mulgrave in Melbourne has a 80%/20% office/industrial mix including some office/warehouse units with a 50%/50% mix. The success of this park has encouraged the developer to purchase a second site for another Com. Park in Melbourne.

Appendix E3 highlighted key points from recent industrial tenant pre-commitment activity in Brisbane. These include:

- 37.3% of these tenants had a requirement for 20% or more of office floor space with 13.7% having a requirement for 50% or more of office space;
- three of these tenants had requirements for in excess of 3,000sqm of office space and eleven had requirements in excess of 1,000sqm. These represent significant office tenancies even in a CBD market; and
- in the order of 15% of industrial pre-commitments in Brisbane over the past seven years have required an office component of 50% or greater.

The NEBP MIBA will be well positioned to accommodate the need to provide for a flexible mix of land uses and proportions of floor space required by employment land investors and occupiers. If this is not provided these users will go elsewhere and in the case of major regional organisations this may mean bypassing Brisbane and the Southeast Queensland Region altogether.

The Opportunity

NEBP represents an excellent opportunity to provide employment lands consistent with the emergent trends of contemporary business park land uses. The key features which

dominate the overall characteristic of this land use provided at NEBP MIBA precinct include the following.

- The location of the NEBP has a strong, comparative advantage over sites in regards to access as it is situated adjacent to the Bruce Highway and the Caboolture River. Caboolture is strategically located for region-wide access to Brisbane or the Sunshine Coast.
- It is just 35 minutes from Brisbane Airport, 55 minutes from the bustling Port of Brisbane and 45 minutes from the Sunshine Coast via the Bruce Highway (M1). Caboolture is also conveniently located on Queensland's main north-south rail link for ease of bulk container freight movement.
- The development of the employment lands at the NBP will significantly assist the achievement of the then Caboolture Shire Council Corporate Plan and its strategy for self containment. This strategy seeks to achieve a target whereby over the next twenty years, 2 out of every 3 Caboolture workers live and work in Caboolture.
- It is considered that the NEBP would be a unique development which represents a significant upgrade in quality compared to the existing supply of industry/business park floorspace in the northern Brisbane area. It also represents the opportunity to be a leading example at the national level of the change which is occurring in industrial land uses.
- While the proposed business park is planned to be a contemporary facility, much of the existing industrial/business park land uses in the area are more consistent with traditional industrial estates in terms of design, standard of amenity and associated land uses.
- It is considered that traditional industrial land uses generate in the order of up to 40 workers per hectare. In contrast, the employment generated from a contemporary, world class business park facility is anticipated to be much higher. Case studies show in the order of 60-70 workers per hectare and higher in some instances. This effect is due to the higher numbers of employees which would result from the trend towards higher ratios of commercial to non-commercial floorspace in industrial/business parks.
- From the then Caboolture Shire Council's perspective this would indicate that significantly less industrial land would be required to generate considerably higher levels of employment. Therefore, higher employment will be generated as a consequence of a business park land use than would be possible under the traditional industrial estate type land uses.
- The types of industries and businesses considered likely candidates to locate at the proposed business park are marine, biotech, information and communication technology (ICT) and logistics/warehouse industries. Others may include aviation and food related industries.
- The development of the business park is consistent with a number of the key strategic directions that the Southeast Queensland Regional Plan incorporates to manage growth in Southeast Queensland. These key strategic directions include the following:
  - creating a more sustainable future;
  - identifying land to accommodate future growth;
  - promoting land use efficiency;
  - enhancing the identity of regional communities;
  - providing infrastructure and services; and
  - integrating land use, transport and economic activity.
- It is also consistent with a range of the key desired outcomes of the Southeast Queensland Regional Plan. These include the following:
  - economic development;
  - industry and business development;
  - Smart State – the promotion of innovation, skills and technology;
  - total water cycle management;
  - environmental values and water quality; and

    - employment and economic activity areas.
- NEBP also responds to a number of other commercial and demographic changes reflecting broader worker needs that have influenced requirements for more diverse land uses in employment areas.
- These relate to business and employee needs for retail services, accommodation, recreational facilities, and social services.

The key to achieving the necessary diversity of uses for employment locations such as business and industrial parks appears to be in the flexibility of the relevant land use planning. This approach is the way of the future and should governments have objectives of minimising trips and promoting employment in closer proximity to residents then these types of policies must be implemented. This approach could be achieved to great effect in the NEBP.

While the NEBP MIBA precincts represent high quality development, significant expenditure and employment benefits would be lost to the region under a proposal which did not incorporate the key components which are located outside the footprint.

Use of Industrial Land for Non-Industrial Purposes

The NEBP proposals seek to use District Industry zoned land for non-industrial purposes, primarily through:

- the designation of land within Lot 10 lying to the south/east of Raff Creek for residential use (Precinct 3(1) Residential West); and
- the proposed inclusion of Retail showroom activities in the MIBA Precincts.

Reasons for designating the residential precinct in a portion of the District industry land were included in section 5.1.11.1 of Appendix C2 of the NEBP EIS, whilst the rationale for the inclusion of a Retail Showroom cluster was covered in Section 5.1.6 of that report. Whilst the amended land use pattern does depart from a direct interpretation of the Planning Scheme, there are a number of primary factors which justify this departure. They are:

- employment land areas are greater in the NEBP proposal;
- employment and economic benefit levels are greater;
- better structural integration of land uses into surrounding area and with respect to natural features;
- population levels support a primary school, public transport, marina village and the MIBA itself;
- additional employment land can be created with population growth; and
- the overall proposal provides greater net benefits than alternative proposals.

Appendix A of this Supplementary EIS discusses each of the above factors in detail in Section 5.2.

Centres Hierarchy

Section 7.0 of the Supplementary Planning Report, presented as Appendix A, examines the relationship of the NEBP's commercial/retail land uses to the *ShirePlan's* centres hierarchy, substantiating the findings of Section 5.1 of the NEBP Planning Report that the extent of activity proposed is appropriate given the employee and residential populations to be achieved on the site across the development's twenty-year implementation phase and the likelihood of adjoining urban residential development within this period.

Appendix A of the Supplementary EIS prescribes that the commercial uses which do locate within the MIBA will naturally locate because of the nexus they have with the uses to be

located in the MIBA. The drivers for business location have also been discussed, specifically section 6 of Appendix A. In particular section 6.7 identifies that the drivers to locate in NEBP are quite different to the drivers present in the Caboolture CBD. Accordingly, it is contended that the NEBP development will be a major factor helping to strengthen employment within the CBD and Caboolture's role as an emerging regional city.

The NEBP development will provide a working population of some 13,685 persons. Whilst the centres hierarchy in the Planning Scheme is largely retail driven, the presence of this volume of people means that NEBP is a substantial employment centre in its own right. This volume of people and business naturally generates the need for a wide variety of supporting commercial and retail uses.

The relationship between NEBP and Morayfield and Burpengary is complementary, with NEBP accommodating employment led uses which cannot locate at Morayfield

Specifically the commercial office floor space market in Caboolture is estimated to be is in the order of 51,000 m^2 with approximately 23,000 m^2 occupied by government tenants.

It has been determined that the commercial office market in Caboolture will not be adversely impacted on as the commercial office space is taken up by tenants within NEBP MIBA. In a general sense, the overall driver for commercial floor space is growth in white collar employment. However, there are important differences in the types of businesses and the patterns of a commercial office space agglomeration that are anticipated to emerge in Caboolture and at the MIBA.

The demand for commercial office space at the NEBP MIBA will relate to the types of industries and businesses established on the site. In other words, the commercial floor space will be leveraged off the types of uses identified in the Urbis Business Park Assessment which included:

- Marine industries;
- Advanced manufacturing;
- Biotech (including the pharmaceutical sector);
- ICT; and
- Logistics/Warehouse.

Other industries/businesses which could also be considered as being suited to locating at the industry/business park include aviation and food related industries.

Commercial floor space demand within the NEBP MIBA will be driven largely by the accommodation needs of the office workers employed in the business operations of these activities. Businesses benefit from accommodation strategies which locates the office operations on site with the business' light industrial or research and development activities. This a key driver of the evolution of traditional industrial land uses into the contemporary business park format. This includes the supply of floor space in campus or large floor plate formats. While it is possible that the office activities of firms with industrial activities located at NBP would locate in the commercial areas of Caboolture, it is likely that they would not receive the potential benefits of co-location. In addition, it is considered that the large floor plate type format is more suited to the NEBP site rather than within the commercial district of Caboolture.

Caboolture's commercial office market is expected to expand as traditional white collar employment opportunities present. Typically, this traditional type of demand would be expected to be consistent with Caboolture's status as a PAC. This would include government and traditional professional and business services uses. It is envisaged that the typical commercial tenant within Caboolture would be seeking a floorspace of less than 500 m^2.

Caboolture's supply of traditional commercial office is expected to grow as the professional needs of the growing population increase. It is likely that this demand will continue to be driven by a requirement by firms to:

- remain in relative proximity to existing business location and/or place of residence;
- upgrade accommodation; and
- co-locate in an area with more critical mass and convenience retail facilities.

These drivers of demand will continue to operate within Caboolture and in the general area of the Moreton Bay Regional Council LGA.

It is also suggested that there is likely to be growing demand for traditional professional services from the NEBP residential population and commercial community. In this sense, the NEBP is anticipated to act as a catalyst for increasing floor space demand within Caboolture.

In summary, technical reports provided in support of a business demand and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 6 Business Demand EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	Planning Report
NEBP EIS	Appendix E1	Economic Benefit Assessment
NEBP EIS	Appendix E3	Business Park Assessment
NEBP EIS	Appendix E4	Bulky Goods Assessment
NEBP EIS	Appendix E5	Hotel Demand
NEBP EIS	Appendix F	Community Context Study
NEBP EIS	Appendix G	Community Consultation Report
NEBP Supplementary EIS	Appendix A	Supplementary Planning Report
NEBP Supplementary EIS	Appendix B	Revised Net Benefit Assessment, July 2008

3.1.2.4 Open Space Demand

The provision of open space at NEBP is addressed in several sections of the Planning Report, existing as Appendix C2 of the NEBP EIS, including Sections 4.2, 4.5.4 and 8.4.6.2 that provides a response to these *Shire Plan* requirements for dedication of open space for park.

Specific Outcome 22 (SO22) of the Reconfiguration of a Lot Code sets out the requirement to provide open spaces in development. Probable Solutions S22.1 and S22.5 establish the requirement for park dedication, namely

- 10% of the site area,
- the dedicated area to be above the 20 year ARI (Q20) flood level, and
- 50% of the dedicated area to be above the 100 year ARI (Q100) flood level.

Planning Scheme Policy 17 (PSP17) provides detailed criteria on when Council will accept the dedication of park in satisfaction of SO22, including alternative mechanisms for the provision of open space.

Following the enhancement of the flood modelling, additional mapping of the open space provision has been undertaken and is provided as drawings numbered 7900/33/05-600 to 7900/33/05-604, which indicates the extent of open space land which lies between the post-earthworks Q100and Q10 respectively lines. This indicates the effect of flooding impacts on the broader area of open space.

In response to the requirements of the PSP17 about the land's basic characteristics, of the 419.6ha of land included in the Open Space Precincts, some 49.9ha is above the Q20 line (post bulk earthworks). Of this extent, some 26.1ha or 52.3% is above the Q100 line as shown in drawing number 7900/33/05-600.

The 49.9ha is considered to satisfy the requirement for a 10% dedication when considered against the target open space provision which would apply to the 349.4ha of MIBA/Marina/Residential development footprint of the site. As outlined in Section 8.4.6.2 of the Appendix C2 of the NEBP EIS, the appropriate target is based on the developable area of 349.9ha as 90% of a nominal site providing park dedication, accordingly the nominal site area would be 388ha (349.4 ha / 90%). This would generate a 10% open space contribution of 38.8ha.

Notwithstanding the planning policy requirement for development to delivery community benefit through the provision of park and open space, there is a need to establish the appropriate form of provision in response to identified community need and the desired level of service provision. This has been addressed extensively in the community context report, appended to the NEBP EIS as Appendix F and in supporting material to the supplementary EIS, which shows that there is a broad requirement for formal and informal sporting, recreation and open space provision.

The significant scale of publicly accessible open space and recreation facilities being provided by NEBP responds to this identified need and the desires expressed by community throughout the consultation program. Consequently, the Landscape Master plan Report, existing as Appendix P of the NEBP EIS illustrates how these facilities can be provided. Together, the Community Context report and Landscape Master plan establish the extent of facilities necessary, as accommodated in the 260 hectares of Precinct 4(3) Open Space.
Technical reports provided in support of open space demand and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 7 Open Space EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	Planning Report
NEBP EIS	Appendix E6	Golf Course Demand
NEBP EIS	Appendix H1	Stormwater Management Plan
NEBP EIS	Appendix I	MIKE21 Flood Study
NEBP EIS	Appendix L1	Terrestrial Ecology
NEBP EIS	Appendix N	Noise Impact Assessment
NEBP EIS	Appendix P	Landscape Masterplan
NEBP EIS	Appendix Q	Scenic Quality and Visual Impact
NEBP Supplementary EIS	Appendix A	Supplementary Planning Report
NEBP Supplementary EIS	Appendix B	Revised Net Benefit Assessment
NEBP Supplementary EIS	Appendix D	Revised Acid Sulfate Soil Management Plan
NEBP Supplementary EIS	Appendix E	Revised MIKE21 Flood Study

3.1.3 Infrastructure Agreements

As set out in Section 4.8 of Appendix C2 of the NEBP EIS and reiterated in Appendix A of the Supplementary EIS, the NEBP will provide all internal infrastructure (water supply, sewerage, roads, pedestrian and cycle linkages, open space and parkland), external infrastructure upgrades as negotiated through development approvals, and funding mechanisms for the facilitation of public transport between the site and Caboolture and Morayfield.

Any Infrastructure Agreements are anticipated set out how approval conditions will be satisfied, desired standards of service for infrastructure networks, charging and cost apportionment, agreed timing for the provision of services and upgrades to infrastructure.

It is anticipated that the CoG's Report will provide conditions and directions in this regard, to ensure that all stakeholders have a clear basis for their participation in preparation of the Infrastructure Agreement and associated maintenance agreements.

3.1.4 NEBP Area Plan Revisions

A series of issues have been raised in submissions to the EIS, seeking minor changes to structure, format and codes proposed within the NEBP Area Plan.

It is proposed that detailed Area Plan drafting matters be addressed directly between MBRC and the Proponent, as these issues are not critical to resolution of the EIS assessment. Discussions with Council Officers have commenced resolution of these detailed matters. Resolution will be necessary prior to determination of the two Preliminary

Approval applications, though it is noted that conditions of the CG's Report may also guide the content of the NEBP Area Plan.

With specific regard to Council's position that the House Code and the Open Space Precincts Code proposed in the NEBP Area Plan revert to the Shire Plan, whilst Council has noted that these areas can default to the Shire Plan with additional, or addendum requirements as necessary, it is considered that the changes from the standard provisions are significantly greater than can easily be addressed in additional and addendum provisions. Furthermore, it is envisaged that a replacement Planning Scheme will be prepared in the foreseeable future across the full MBRC area. Such a Planning Scheme may not incorporate both the detail and flexibility sought for NEBP which is all the more reason for the creation and implementation of the NEBP Area Plan in order to achieve the necessary State and regional benefits.

3.2 Project Alternatives

The NEBP EIS considered the alternatives of the development in an objective way in Section 2.2.

A number of alternatives to the preferred NEBP development were investigated during the design and compilation of the NEBP EIS in response to the final ToR. The NEBP proposal is the result of years of design input and consideration of many alternative combinations of the development.

The preferred NEBP development is based on technical investigations that presented the minimalist impact to the environment thereby complying with the objectives underpinning Queensland legislation for ecologically sustainable development. Consultants preparing the technical assessments were identified as the study team in Appendix A2 of the NEBP EIS, and consist of experienced and reputable professionals who undertook independent impact assessments determining acceptable impacts through risk assessment and recommending best practice environmental management. Such recommendations have been incorporated into the environmental management system of the NEBP development, consisting of multiple environmental management plans specified in Section 5 of the NEBP EIS.

3.2.1 Alternative Development Locations

Section 2.2 of the NEBP EIS considered the availability of alternative locations in Southeast Queensland which can accommodate the combined proposal of a marina and marine industries cluster to demonstrate the appropriateness of the site for the NEBP development.

The analysis of potential marina sites by the Proponent and Pacific Southwest, as described in Appendices E7 and E8 of the NEBP EIS, revealed the difficulties of finding any substantial marina sites in the region north of the Brisbane River which underpins the current site appropriateness.

In addition to the difficulties of identifying marina sites, the ability to co-locate the marina with a Marine Industries precinct is one of the key attributes of the development and requires a rare combination of marine navigability, environmental appropriateness, adjoining land use suitability, linkages to infrastructure and location with respect to centres and population.

We highlight that in today's rigourous assessment process, the development location depends on a number of equally important aspects. The project must qualify in each particular aspect as achievable otherwise the "Development Risk" is significantly increased. Essentially the likelihood of a developer being able to secure a net benefit is less likely the more aspects of the development are recognised as impacts. One can only achieve that

net benefit if the development has elevated prospects of statutory approval. It is not simply a matter of geographic location.

One can have a suitable site geographically but statutory encumberances or physical features may prevent that site from realizing its development potential. There are a number of characteristics that need to be taken into account.

The NEBP marina is a unique site in that it has a multitude of characteristics that are not available to other sites that will secure its success. These characteristics are listed below.

1. The marina site and the development of the marina will have an overall positive net benefit to the environment.
2. The marina site will have an overall positive net benefit to the local community
3. The marina site and the development will provide significant ongoing contributions (funding, rehabilitation, stormwater management and education) for the better management of the Caboolture River and ultimately the Deception Bay Fish Habitat Area and the Moreton Bay Marine Park.
4. The marina site is a dry excavation thus reducing significantly problems with dredge plumes.
5. The marina site is freehold tenure not Crown leasehold.
6. The marina site is close to a large population centre with an existing although constrained marine industry cluster. The provision of a facility such as the marina will add value and remove constraints from that cluster.
7. The marina site has good access to the main highway.
8. The marina site has good deep water frontage.
9. The tidal prism of the Caboolture River can be managed within minimum acceptable thresholds.
10. The marina site is degraded. Any development will improve the environmental profile of the site.
11. The Marina site can be developed without interfering with the flood storage capacity of the flood plain.
12. The marina site has marked and controlled navigation channel access (although this has silted up and requires dredging).
13. The marina site has the ability to be developed beyond 250 berths. a size considered to make the project financially viable in the long term.
14. The marina site is accessible by tall-masted vessels (no bridge structures) therefore is not an exclusive marina.
15. The marina site is virtually devoid of marine vegetation and fronting the River the bank severely eroded.
16. The marina is recognized by Government as necessary and important.

The Department of Tourism and Regional Development has recorded the current status of existing and proposed marinas. An analysis of this Government data has indicated that no other site between the Mary River and Brisbane has the above characteristics to meet the growing demand of boating registrations in Queensland and sustain the wealth of the marine industry, and subsequently local jobs. In particular there is a lack of existing and proposed sites north of the Brisbane River. This is consistent with Port Binnli Pty Ltd investigations over the last 5 years to determine potential viable water development sites in Queensland.

The Department has also indicated its support of large self funded developers which should lead to improved facilities, practices and professionalism within the marina industry and also recognizes the planning approval process to manage this demand requires significant overhaul. Studies are proposed to inform the overall strategic framework for future and public investment in the provision of marine infrastructure. The timing of this study is unknown. In the interim the NEBP development addresses the shortfall in marina berth and in combination with the economic, social and environmental benefits, is a unique proposal that is appropriately sited.

In summary the NEBP site not only allows the location of a Shipyard directly adjacent to the marina, the proximity of the MIBA allows the creation of a substantial marine industries precinct within the MIBA, facilitating a specialist cluster of marine related industries supporting the continued strengthening of the Marine Industries in SEQ, as well as supporting crossover industries such as renewable energy and advanced materials which may also locate in the MIBA.

The NEBP site provides a unique array of attributes which clearly supports this synergistic co-location. There is no doubt that there is no other opportunity of this nature in the northern sector of Brisbane.

The strategic justification of the NEBP development is provided in Section 3.1 and is supported by Appendix A.

3.3 Matters of National Environmental Significance

In accordance with the NEBP EIS ToR, a stand alone report on the Matters of National Environmental Significance (matters of NES) was prepared and presented as Appendix L3 of the NEBP EIS. Potential impacts as they relate to matters of NES were identified and appropriate mitigation measures were proposed to minimise potential impacts on matters of NES.

NEBP EIS submissions indicate that there were a number of issues in the matters of NES Report that required further attention, including:

- the impact of dredging operations, substantially increased boating traffic and associated human disturbance on migratory waders, particularly shorebirds utilising the high tide roost sites on or near the Caboolture River;
- further analysis and discussion of the potential impacts of the NEBP development with regard to the ecological character and listing criteria of the Moreton Bay Ramsar Wetland;
- the provision of clearer linkages between the objectives of the Environmental Management Plans, the relevant guidelines and standards to be adhered to, and the impacts on matters of NES to be mitigated;
- additional information concerning the proposed measures for the control of weeds and pests, and how such measures intend to mitigate the impacts on the Ramsar listed wetlands of Moreton Bay;
- additional detail and discussion concerning how the proposed stormwater management regime will mitigate impacts on matters of NES, including proposed water quality monitoring programs;
- a discussion of the benefit of vegetation offsets to EPBC listed species is required, including details concerning the location, size, condition, and security of tenure and active management arrangements of the proposed offset; and
- clarification of inconsistencies in the amount of Qld EPA defined endangered RE that will be disturbed by development.

In response to these various submissions an Addendum to the Matters of National Environmental Significance Report has been prepared and is provided in Appendix C of the NEBP Supplementary EIS.

3.4 Land – Transport

For the purposes of the supplementary traffic assessment, the Caboolture Shire Council and subsequent Local Government Area (LGA) has been referenced for consistency with that presented in the NEBP EIS, as Appendices K1 and K2.

3.4.1 State-controlled Road Impacts

Additional consideration of the NEBP impact assessments as they relate to transport (existing as Appendices K1 and K2 to the NEBP EIS) has been undertaken by Cardno Eppell Olsen (CEO), in consultation with the Department of Main Roads (DMR). Specific issues included:

1. incorporation of the proposed North South Arterial (NSA);
2. validity of the Strategic Model;
3. assessment Scope;
4. Ramp Analysis;
5. infrastructure contributions; and
6. traffic generation rates.

3.4.1.1 North South Arterial

The timing and alignment of this link is currently undefined by DMR. Preliminary advice from DMR has indicated that the following should be considered in the site layout.

- Allow a corridor through the site to provide a connection between the eastern boundary (for further connection to a possible NSA) and the northern boundary (for a potential connection to Bribie Island Road);
- The future layout should allocate priority to movements along this link;
- The standard of this connection should be similar to the Mango Hill section of the NSA.

The site layout includes provision for a high standard link along the Main Boulevard. DMR can provide conditions to stipulate the requirements for this link in terms of alignment, intersection spacing and cross section requirements. It was agreed that the Proponent will continue to work with DMR to refine the master plan to accommodate this link or appropriate connection to the NSA.

It is noted that recent discussions on 15 July 2008 with the Moreton Regional Director of DMR has indicated a high level of satisfaction with the proposal of the NSA option.

3.4.1.2 Validity of the Strategic Model

The NEBP project has been identified as a project of significance with regional impacts and distribution effects. Assessment has therefore been undertaken for the broader network using a strategic model with the capability to assess the redistribution of trips.

The Brisbane Strategic Transport Model (BSTM) was used to forecast the road network traffic volumes at the 2016 future horizon with the development. Alternative models such as the Caboolture model were considered to be limited in scope (i.e. they do not have a distribution model appropriate for the traffic assignments/distribution resulting from the development). Since the development will significantly change the distribution of employment based trips, particularly for Caboolture residents, it is important that the traffic model be able to redistribute such trips. A feature of the Caboolture Model is that all longer distance trips from Brisbane are "hard wired" and these would need to be manually reassigned to reflect the distribution changes.

Assessment of the BSTM parameters and outputs in view of 2001 census data and manual assessment has been undertaken to validate the modelled results and the ability of the model to accurately represent the travel patters and levels of diverted trips. The development will generate a high proportion of work related trips and comparison between 2001 Journey to Work data and BSTM EMME/2 model parameters has been undertaken to determine if the modelled travel patterns reasonably correlate to the recorded census data.

Two data sets were obtained from the 2001 Journey to Work, namely:

- work location by Local Government Area (LGA) for the then Caboolture residents;
- LGA of usual residence for workers in the then Caboolture LGA.

Table 8 below present the work location by LGA area by usual residence (Caboolture).

Table 8 2001 Census – LGA Journey to Work by LGA Usual Residence (Caboolture)

Work Location	Total	Percentage
Caboolture	18,363	47%
Brisbane	11,619	29%
Pine Rivers	2,867	7%
Undefined (Qld)	2,721	7%
Redcliffe	2,093	5%
Caloundra	355	1%
Maroochy	274	1%
Other	1,231	3%
TOTAL	**39,523**	**100%**

The 2001 Journey to Work data shows that only 47% of Caboolture resident workers find employment in Caboolture with the remaining 53% travelling outside of the LGA for employment. The 2016 BSTM (with the business park) includes a similar proportion of resident workers with 46% working in Caboolture. The model shows that the business park has the potential to reduce the need for some of the long distance commuter trips between Caboolture and areas outside of the Caboolture LGA.

Data relating to travel to places of work in the Caboolture LGA was also interrogated and is summarised in Table 9.

Table 9 2001 Census – LGA Journey to Work by LGA Work Location (Caboolture)

Residence Location	Total	Percentage
Caboolture	18,363	74%
Pine Rivers	1,623	6%
Brisbane	1,534	6%
Redcliffe	887	4%
Caloundra	855	4%
Maroochy	388	2%
Kilcoy	137	1%
Logan	122	1%
Other	457	2%
TOTAL	**24,366**	**100%**

The data presented shows that 74% of the jobs in Caboolture are filled by Caboolture residents, which indicates a preference for local employment (if available). The BSTM suggests that the business park would have a similar pattern with 73% of workers arriving from the Caboolture LGA. The amount of long distance commuter trips is not significant with only 6% from the Brisbane area (generally south of Pine Rivers). The majority of site workers come from Caboolture and are diverted from otherwise travelling outside of the

shire (and largely to destinations south of Caboolture Shire). The Journey to Work data is supportive of this outcome.

Given the similarities between journey to work data (from 2001 census data) and the employment based trip distribution in the BSTM, it was agreed with DMR that the BSTM reasonably reflects the Journey to Work data and that the business park would create local employment opportunities and thereby reduce some of the current long distance commuter trips. The model was therefore considered to adequately define the long distance trip patterns and scope of impact on the Bruce Highway.

3.4.1.3 Assessment Scope

The DMR Guidelines for Assessment of Road Impacts of Development Proposals (GARID) suggests that assessment is made for links where the development traffic exceeds 5% of current AADT levels. Development impacts have been assessed based on the daily volume increase identified in the 2016 BSTM (with NEBP versus without NEBP). The analysis shows that it has regional level effects, notably the improvement in the jobs balance for Caboolture reduces commuting towards Brisbane. This comparison considers the effects of the extra traffic generated by the NEBP as well as the traffic redistributions (due to changes in employment trips) associated with the NEBP. Table 10 summarises the volume comparison for determining development impacts.

Table 10 Development Impacts

Road	Location	2007 AADT (Census)	2016 base (BSTM)	2016 base + NEBP (BSTM)	Development Generated Volume Increase (BSTM)	% increase compared to 2007 AADT
Bruce Highway	North of Bribie Island Road	52,900	85,953	86,771	818	2%
Bruce Highway	North of Buchanan Road	73,000	116,851	120,180	3,329	5%
Bruce Highway	South of Buchanan Road	73,000	111,145	112,426	1,281	2%
Bruce Highway	South of Uhlmann Road	77,800	127,496	130,587	3,091	4%
Bruce Highway	South of Old Bay Road	80,400	130,736	131,750	1,014	1%
Bribie Island Road	East of the Bruce Highway	18,100	39,622	40,532	910	5%
Lower King Street	West of the Bruce Highway	23,800	29,673	30,061	388	2%
Buchanan Road*	***West of the Bruce Highway***	***10,600***	***26,224***	***31,104***	***4,880***	***46%***
Morayfield Road	South of Station Road	29,900	34,308	34,042	-266	-1%
Morayfield Road	North of Station Road	31,800	48,322	49,706	1,384	4%
Uhlmann Road	***West of the Bruce Highway***	***17,800***	***16,033***	***17,617***	***1,584***	***9%***
Morayfield Road (Burpengary Service Road)	South of Uhlmann Road	11,100	11,832	11,107	-725	-7%
Morayfield Road	North of Uhlmann Road	25,500	27,289	27,638	349	1%
D'Aguilar Highway	West of the Bruce Highway	9,100	N/A	N/A	N/A	N/A

It is noted that the model does not include the recently constructed section of the D'Aguilar Highway connecting to the Bruce Highway (Caboolture Northern Bypass). This link is provided as a bypass of Lower King Street and with this link in place development traffic on Lower King Street (388vpd) would be distributed across the two connections. This would reduce the impact on both links and since impacts on Lower King Street are only 2%, the development impacts on the D'Aguilar Highway are expected to be limited.

Assessment has been undertaken for links where development impacts may be significant, i.e. where the 5% criterion is exceeded (in accordance with the DMR Guidelines). This includes Uhlmann Road and Buchanan Road. In addition, assessment has also been

considered for Buckley Road. Details of this analysis are included in the Appendix K2 of the NEBP EIS. Assessment has also been undertaken for the operation of the Bruce Highway on and off ramps at the Buchanan Road, Uhlmann Road and Service Station interchanges. This analysis considers a conservative scenario where all trips are additional to the background demand. On the basis of the above, it is clear that the assessment scope undertaken as shown in Appendix K2 of the NEBP EIS complies with the requirements of the DMR Guidelines

As discussed above, the model can accurately describe the scope of impacts on the Bruce Highway and that the assessment scope along this link is considered sufficient to determine the level of impact on the Bruce Highway.

3.4.1.4 Ramp Analysis

Ramp analysis has been undertaken using HCS+ Ramps and Junctions Release 5.21. This software relies on the principles of the Highway Capacity Manual 2000 (HCM). The Detailed Analysis (provided as a separate appendix to the traffic report) includes full analysis reports, cites the sections of the HCM relied on for formulae, and provides sufficient information for the State to make an informed assessment.

Some of the terminology used in Appendix K1 and K2 of the NEBP EIS needs clarification given the definitions in the Highway Capacity Manual (HCM) and the Roads and Planning Design Manual (RPDM) having slight inconsistencies. References to acceleration and deceleration lanes in Appendix K1 and K2 of the NEBP EIS are to the HCM definitions, which are used for the analysis of the ramp capacities. The HCM acceleration and deceleration lanes are the same areas as the RPDM diverge and merge parallel lanes.

The ramp analysis specifies a maximum length for weaving segments of 750m. Longer sections may have weaving, however merging and diverging movements tend to be separated with lane changing concentrated near ramps. Operations for these longer sections are generally representative of typical freeway lane changes except at the ramp influence areas.

The HCM suggests that the operational effect of merging is typically heaviest in the two lanes closest to the kerb for a distance of 450m in the downstream direction from the physical merge point and in the acceleration lane. Similarly, the greatest influence of diverges are in the kerbside lanes in the area upstream of the off lane and in the deceleration lane. The influence area for a diverge section is 450m from the physical merge point. These distances are illustrated in Exhibit 13-14 of the HCM.

The separation of the Bribie Island Road ramps and Buchanan Road is approximately 1,500m. Analysis has therefore not considered weaving segments, only the operation of diverge and merge areas. It is recognised that signage should consider the relative close proximity of ramps to allow adequate reaction time for unfamiliar drivers. Note however that the design has been recommended as part of the Arup study commissioned by DMR for this road section and that the NEBP EIS does not propose any changes to the overall recommendations of this report.

Concern over the midblock volumes exceeding capacity was highlighted in the submissions. The ramp analysis is initiated with a capacity check for the relevant freeway segment upstream and/or downstream of the on/off ramp. This ensures that adequate capacity is available midblock before analysis of the ramp merge/diverge area is further investigated.

The midblock capacity has been further assessed in accordance with AUSTROADS guidelines, using a maximum lane capacity of 2,000vph. The analysis results are summarized in Tables 11 – 14 below.

Table 11 2020 Traffic Volumes and Cross Section Requirements – Without Development

Section of the Bruce Highway	AM Peak		PM Peak		Cross Section
	Northbound	Southbound	Northbound	Southbound	
North of Buchanan Road	3,756	4,590	5,174	3,784	6 lanes
North of Service Station Ramps	3,880	4,390	5,375	3,752	6 lanes
North of Uhlmann Road	3,880	4,390	5,375	3,752	6 lanes
South of Uhlmann Road	3,679	4,620	5,842	3,633	6 lanes

Table 12 2020 Traffic Volumes and Cross Section Requirements – With Development

Section of the Bruce Highway	AM Peak		PM Peak		Cross Section
	Northbound	Southbound	Northbound	Southbound	
North of Buchanan Road	4,178	5,393	6,034	4,239	8 lanes
North of Service Station Ramps	4,518	4,587	5,586	4,383	6 lanes
North of Uhlmann Road	4,518	4,587	5,586	4,383	6 lanes
South of Uhlmann Road	4,298	4,944	6,216	4,296	8 lanes

Table 13 2030 Traffic Volumes and Cross Section Requirements – Without Development

Section of the Bruce Highway	AM Peak		PM Peak		Cross Section
	Northbound	Southbound	Northbound	Southbound	
North of Buchanan Road	4,798	5,501	6,154	4,624	8 lanes
North of Service Station Ramps	5,026	5,293	6,492	4,681	8 lanes
North of Uhlmann Road	5,026	5,293	6,492	4,681	8 lanes
South of Uhlmann Road	4,772	5,584	7,083	4,531	8 lanes

Table 14 2030 Traffic Volumes and Cross Section Requirements – With Development

Section of the Bruce Highway	AM Peak		PM Peak		Cross Section
	Northbound	Southbound	Northbound	Southbound	
North of Buchanan Road	5,220	6,305	7,014	5,109	8 lanes
North of Service Station Ramps	5,664	5,490	6,703	5,313	8 lanes
North of Uhlmann Road	5,664	5,490	6,703	5,313	8 lanes
South of Uhlmann Road	5,392	5,909	7,458	5,194	8 lanes

The analysis suggests that upgrading to eight lanes on the Bruce Highway would be required due to background growth sometime shortly after 2020 and that the development would bring forward the timing of works to some degree. This is consistent with the ramp analysis in Appendix K2 of the existing NEBP EIS and the Bruce Highway Upgrade, Uhlmann Road to Caboolture Bypass report produced by Arup for the DMR in July 2006. An eight lane cross section would have sufficient capacity at 2030 with the full development.

3.4.1.5 Infrastructure Contributions

More detailed information is provided hereafter in relation to the commitments and timing of mitigation works. The current application is for Preliminary Approval. At this point it is unreasonable to expect that final details of the development, staging, and the detailed design of road links to be complete. The conditions imposed by other agencies may also change the development footprint and yield.

The traffic assessment seeks to identify a solution that can enable operation of key intersection and links into the future. The ultimate layouts and responsibilities are identified in Appendix K1 of the existing NEBP as Figures 7.8 - 7.9. Table 15 below provides a summary of the recommended road works program, as identified in the traffic report. This has been updated to include the development responsibility (i.e. no contribution, percentage contribution or development responsibility). The timing of works have been broadly defined as short term referring to existing deficiencies, medium term relating to the initial development stages or equivalent background timing (i.e. around 2010 – 2015) and long term for works required as part of the later stages of development or equivalent background timing (i.e. around 2015 – 2020 or later).

Table 15 Indicative Road Works Program including Development Responsibility

Location	Description	Development Responsibility	Timing
Uhlmann Road	The Uhlmann Road northbound ramps intersection (west of the Bruce Highway) is currently operating over capacity. This intersection will need upgrading to a signalized form with a protected right turn lane from the east, as illustrated on Figure 7.6.	No Contribution	Short Term
Bruce Highway	Widening to six lanes in accordance with current planning	No Contribution	Short Term
Buchanan Road	A slip lane between Buchanan Road west and the northbound on-ramp will need to be added to the existing single lane roundabout east of the Bruce Highway (see Figure 7.7).	Development Responsibility	Medium Term
Buchanan Road	The Buchanan Road/Bruce Highway southbound ramps intersection will need a two lane roundabout configuration to provide for the additional lanes on the eastern and northern approaches (see Figure 7.7).	Development Responsibility	Medium Term
Buchanan Road	Buchanan Road east of the Bruce Highway will need to be modified to accommodate the development access.	Development Responsibility	Medium Term
Nolan Road	Modifications to allow a left in/left out configuration and alternative connection further east along the Main Boulevard	Development Responsibility	Medium Term
Trafalgar Drive	Modifications to allow a left in/left out configuration and alternative connection further east along the Main Boulevard	Development Responsibility	Medium Term
Buckley Road	Upgrades to the existing cross section as per the attached Figure 8.2 - Sub Arterial - Buckley Road - Interim. Potential intersection treatments at Northwood Drive, Ridgewood Drive, Cobb Road and Coach Road (to be agreed with Council)	Development Responsibility	Medium Term
Buchanan Road	Buchanan Road west of the Bruce Highway will need upgrades to accommodate development traffic.	Percentage Contribution	Medium - Long Term

Morayfield Road	Intersections with Morayfield Road at Buchanan Road/Station Road and Graham Road will require upgrading. Further planning is required by DMR & Council to determine the scope of works required and associated cost.	Percentage Contribution	Medium - Long Term
Buchanan Road	Interchange works and bridge widening (see Figure 7.8).	Development Responsibility	Long Term
Bruce Highway	Widening to eight lanes in accordance with current planning.	Percentage Contribution	Long Term
Bruce Highway	Additional lane on the Buchanan Road southbound off ramp.	Percentage Contribution	Long Term
Bruce Highway	Additional lane on the Uhlmann Road northbound off ramp.	Percentage Contribution	Long Term
Uhlmann Road	Interchange works and bridge widening (see Figure 7.9).	Percentage Contribution	Long Term
Uhlmann Road/ Buckley Road	Intersection works (see Figure 7.9).	Percentage Contribution	Long Term
Nolan Road	Modifications to a cul-de-sac arrangement with alternative connection further east along the Main Boulevard	Development Responsibility	Long Term
Trafalgar Drive	Modifications to a cul-de-sac arrangement with alternative connection further east along the Main Boulevard	Development Responsibility	Long Term
North South Arterial	Provision of an alternative to the currently proposed eastern alignment, including provision of a road reserve between the Main Boulevard and the northern boundary and between the Main Boulevard and eastern boundary. Design consideration for this link along the Main Boulevard	Percentage Contribution*	Long Term
North South Arterial	Provision of a North South Arterial Connection north from the Main Boulevard to the Caboolture River Road and east to the North South Arterial	No Contribution	As Required
Pedestrian & Bicycle paths	Internal Connections	Development Responsibility	As Development Progresses
Pedestrian & Bicycle paths	External Connections	Percentage Contribution	In Accordance with Current Planning
Public Transport	Development responsibility for early provision of public transport services and facilities	Percentage Contribution	As Agreed with TransLink

**Costs beyond the project specific requirement for the Main Boulevard would be considered as credit to offset requirements elsewhere*

An Infrastructure Agreement will be developed to identify a framework for future contributions.

It would be appropriate to assess the detailed requirements and timing of any mitigation works at a later stage when more detail is available for the staging of the development and when the final footprint and yield has been established. It is therefore proposed that the infrastructure contributions and staging upgrade requirements be assessed as part of an Infrastructure Agreement and subsequent development applications for the NEBP development.

3.4.1.6 Traffic Generation Rates

The generation rate for the NEBP industrial area was based on survey information collected at Metroplex, Brisbane and Norwest, Sydney in consideration of the respective employment densities. An hourly rate at 21vph/ha was identified for the subject site.

CEO has also undertaken surveys of other large scale industrial estates. The following briefly describes the relevant sites.

Smeaton Grange Ironbark Estate is a suburb in the west of Sydney. The suburb is currently partially developed with approximately 123ha occupied by industrial land uses. The site comprises approximately 65% warehouse, 18% industry and 17% mixed use. Marsden Industrial Estate in Logan City is located on 140.61ha, with approximately 75.84ha occupied by industrial uses at the time of the surveys. Carole Park Industrial Estate, Ipswich is a 63.62ha estate separated into an eastern precinct and a western precinct by Boundary Road and Cobalt Street. At the time of the traffic surveys 53.06ha was occupied.

Traffic survey data collected for the above properties suggests an hourly traffic generation rate in the order of 10 to 21vph/ha. It is therefore concluded that the rate used for the NEBP EIS appears to be reasonable for a large scale development and that the higher rate, 40.5vph/ha, used by the DMR Preconstruction Processes Manual and the Transport Assessment Guide prepared by Queensland Transport may not be applicable to these very large industrial estates.

It was noted that the peak generation for the industrial estates occurred well before the road peak, particularly in the AM peak. The analysis has not made an allowance for a reduction in the demand to account for the different peaks and can therefore be considered conservative. Further detailed analysis may consider the temporal variation of peaks.

3.4.2 Locally-controlled Road Impacts

The traffic impact assessments included as Appendix K1 and K2 of the existing NEPB EIS includes a conservative, manual assessment of local intersections and links, including:

- Buchanan Road/Bruce Highway Northbound ramps interchange intersection;
- Buchanan Road/Bruce Highway Southbound ramps interchange intersection;
- Uhlmann Road/Buckley Road intersection;
- Uhlmann Road/Bruce Highway Northbound ramps interchange intersection;
- Uhlmann Road/Bruce Highway Southbound ramps interchange intersection;
- Buchanan Road; and
- Uhlmann Road.

The analysis of the above intersections appears to be adequate and appropriate, however the NEBP development may have a greater scope of impacts and consideration should be given to further review of the required upgrades on Buchanan Road and intersections with Morayfield Road at the detailed design stage. The traffic assessment recognises that the development would have impacts on Buckley Road, however relied on Council works planning, as documented in the *ShirePlan* which included the Weir Road link and Station Road upgrade, to address these issues. The Proponent would be responsible for a financial contribution for works which shall be agreed with Council.

It is now understood that the works included in the infrastructure charges scheme may not be sufficient to accommodate the future demand, particularly with the “early” completion of the business park. Further planning is required by the State and Local Government to determine the necessary infrastructure works and associated costs. Locations of concern identified include:

- connection of Buchanan Road to Morayfield Road; and
- Graham Road/Morayfield Road intersection.

Additional information is hereafter provided in relation to issues related to the road hierarchy and road cross sections. Further detail is provided Figure 1 entitled 'Revised Conceptual Road Network' and drawings 7900/33/05-200 to 7900/33/05-204. Figure 2 provides the ultimate configuration for Buchanan and Uhlmann Road.

Figure 1 illustrates that the road hierarchy will be extended to include Buckley Road south of Coach Road as a sub arterial as required by Council. The NEBP initially proposed limited use of Buckley Road due to existing sensitive receptors and as a result of community consultation. This required Council designation however infers a potential for greater reliance on Buckley Road, considering a direct north south connection from Buckley Road to the northern boundary is not feasible without comprising sensitive areas incorporated in the NEBP development proposal and an alternative connection exists in the Main Boulevard – Bruce Highway for heavy vehicle access.

As it is understood that Buckley Road is classified as a sub arterial with the current paved travel lanes located within a 40m road reserve. Parking is proposed on-street however bicycle paths have been proposed off-street to reduce the paved cross section and speed environment. This would also minimise conflicts between bicycles and parked cars. Separate bicycle and pedestrian paths are proposed within a very wide verge to allow an option for fast commuter bicycle travel. This can be accommodated within the existing verge even with a future four lane configuration without the need for further land resumptions.

The conceptual road network seeks to identify major links only with more detailed design proposed for the internal collector streets and trunk road network during the design of the residential precincts. Access to residences would be provided from minor collectors or access streets. It is noted that the environmental corridors tend to create separated neighbourhoods and limit access options to residential areas. However the network figure has been updated to reflect the connection between Trafalgar Drive and the western signalised intersection. It is intended to restrict movements at Trafalgar Drive and Nolan Drive to left in/left out in the interim and to cul-de-sac the links in the long term. This measure should appropriately deal with potential short cutting of industrial traffic in the interim and future scenarios.

The Main Boulevard currently includes intersection forms and locations based on a target minimum 400m intersection spacing. While it is desirable to further minimise the number of intersections, the proposed is considered adequate for a higher order traffic carrying function.

Drawing 790/33/05-203 has been revised, and attached, to include an option for a residential collector with direct property access. This cross section should be considered for links with a catchment of 75 – 300 lots. This includes a 7.5m traffic lane which allows for cars to pass and on street parking opportunities. Given a relatively low traffic volume, on street bicycle lanes are not considered necessary and have not been included in the design. A wider path is recommended to allow for a shared bicycle and pedestrian link off street.

The industrial collector was considered as a 5.0m traffic lane with sufficient space for informal bicycle use on street. This has been modified to 3.5m traffic lanes and 1.5m bike paths as seen in the revised drawing 7900/33/05-202.

The general internal road network conceptually illustrated allows for opportunities for emergency access and alterative roués during temporary obstructions. The safety impacts for the construction and operational traffic cannot be adequately assessed at this stage, but will be as part of the detailed design required for future development approval applications.

Liaison with Queensland Fire and Rescue Service and the Queensland Ambulance Service during construction and operational phases is proposed.

With regard to parking rates the 6.0m cross section for residential access streets and 7.5m for residential collector allows on street parking within residential areas. With a minimum of 2 on site spaces per dwelling (generally provided as one enclosed plus a tandem bay) this should provide adequate parking. This is a matter for detailed design and will be justified further at future development approval stages.

Any reduction in parking will to be assessed and considered once the land use and relative locations are more clearly defined at future development approval stages.

3.4.3 Pedestrian and Bicycle Paths

The Main Boulevard is intended to be a low speed environment with limited through movements and a high level of interaction between cars, bicycles, parking and pedestrian crossings. This environment would promote shared use of the travel paths and the difference in travel speed between cars and bicycles is not as great an in other areas. It would therefore be possible to allow informal use by bicycles without formal bicycle lanes. The street width has been widened from 3.5m to 4.0m to better accommodate shared use.

Appendix K2 included a shared path and on-road bike lane along the Main Boulevard, as shown in Table 8.2 and Figure 9.2 of that report. The report also recommends that pedestrian and bicycle facilities are included in the proposed upgrade of the Buchanan Road overpass. Guidelines for the incorporation of a high standard pedestrian and bicycle network along the internal road network are also outlined in Table 9.1 of that report. The design principles and recommendations of the traffic impact assessment and the RTA Bicycle Guidelines shall be considered in the detailed design of the NEBP development.

It is however recommended that the separate path along the marina front provide for bicycles to allow recreational travel.

3.4.4 Public Transport

Public transport information and commitments within the NEBP internal road network was provided in Appendix K1 and K2 of the NEBP EIS is deemed satisfactory for the purposes of a preliminary development approval application.

Detailed funding for bus services as well as the requirements for bus stop infrastructure and the bus route network will be agreed with TransLink as further applications are made during the detail design of the NEBP development.

3.5 Land - Acid Sulfate Soils

The Acid Sulfate Soil Management Plan (ASSMP) has been revised as part of the NEBP Supplementary EIS. The revised ASSMP specifically addresses compliance with proposed conditions for a preliminary MCU application by the Department of Natural Resources and Water and discusses the effectiveness of the State Planning Policy 2/02 and attendant guidelines for the management of acid sulfate soils in Queensland.

The ASSMP also addresses identified concerns including that:

- excavation of a large amount of earth to create the new basin will activate a significant amount of acid sulfate soil;
- acid sulfate soil has the potential to cause run-of which may significantly harm water quality, killing fish stocks and contributing to blooms of *Lyngbya*;

The revised ASSMP is attached as Appendix D of this NEBP Supplementary EIS and removes specific performance objectives, control measures and monitoring to commit to, and allow for greater flexibility in, designing activity specific management plans based on more detailed ASS investigations at the operational works approval stage. This method has been given preliminary approval by the Department of Natural Resources and Water (DNRW) in the form of a 'concurrence' response in its EIS submission.

The new management strategy requiring the development of activity specific management plans where significant disturbance is required will be prepared in consultation with the DNRW, the advising regulatory authority on acid sulfate soils in Queensland.

Technical reports providing geotechnical constraints analysis and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 16 Geotechnical EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix R1	Geotechnical Interpretative Report
NEBP EIS	Appendix R2	Caboolture River Dredging – Geo-environmental investigations
NEBP Supplementary EIS	Appendix E	Revised Acid Sulfate Soil Management Plan

3.6 Land - Landscape Character and Visual Amenity

Section 4.2.1.7 and 4.2.1.8 of the NEBP EIS provided a description of the existing values of the landscape character and visual amenity at and surrounding the NEBP project area to determine if any inconsistencies result from the NEBP development, with specific emphasis on building heights of urban form. In accordance with the ToR the Proponent commissioned a scenic quality and visual impact assessment, which was undertaken by Studio Tekton and attached as Appendix Q of the NEBP EIS.

This assessment considered the impact of urban form built to proposed heights to inform the NEBP Area Plan. The assessment is considered sufficient for the purposes of the development, given the major views, view sheds, existing viewing outlooks, ridgelines and other features contributing to the amenity of the area including the identification of areas of the proposal that have the capacity to absorb land use changes without detriment to the existing visual quality and landscape character and value of exiting vegetation as a visual screen were assessed.

It was found that the location of the taller structures in the middle of the NEBP project area will ensure that the higher buildings are mitigated by a transition zone of either lower buildings or vegetation, generally a combination of both, which does not dominate the views or impact on the visual amenity from view points surrounding the site.

The Proponent consulted with the Local Government and community regarding proposed building heights during the EIS preparation with no issues as so far to suggest a change was required to the development proposal in terms of building height. Therefore while the proposed building heights deviate from the Shire Plan requirements, the NEBP Area Plan which replaces the Shire Plan, was informed by an objective technical assessment of scenic quality and visual impact which demonstrated no impact during construction or operational phases of the NEBP development. Unless sufficient justification is provided by

Council which validates these concerns, no change to the proposed building heights will be undertaken at this early planning stage.

Section 8.0 of the Supplementary Planning Report, presented as Appendix A, outlines the height limits and intensity of built form proposed against the development objectives and the role of the various development precincts. The Supplementary Planning Report illustrates that the proposals express a suitable form of development given the proposed uses and the opportunities inherent in the NEBP proposals.

3.7 Water Resources

3.7.1 Flooding

A revised flood study has been prepared by Parson Brinkerhoff dated May 2008, which is attached as Appendix E of the Supplementary EIS. The main change from the original flood study has been to the preferred flood mitigation case hereafter described.

The (revised) preferred mitigation case includes a combination of earth diversion banks and additional land cuts. The flood mitigation elements were located in four distinct areas within the development: North by-pass channel; wider north by-pass channel, Raff Creek and the southern by-pass channel.

The preferred mitigation case consists of:

- north by-pass channel — cut to 1.5 m AHD, grass managed;
- Raff Creek — cut to 2.0 m AHD, grass managed;
- south by-pass channel — cut to 1.5 m AHD, grass managed; and
- six earth diversion banks — three near the marina, two on the eastern boundary, one in the north-western section.

The indicative design of the flood mitigation bunds (that is flood diversion bunds) was provided with the EIS in drawing number 7900/33/05-109 and provided in detail as drawing 7900/33/05-110 presented as part of the Supplementary EIS drawing register.

The placement of such bunds was carefully considered as part of the environmental constraints analysis and included in the bulk earthworks assessment. The bunds are integral to minimising the change in flood depths in adjacent properties. Two bunds will be located within the ground-truth mapped Coastal Management District (CMD), revised as Figure 1 of the Supplementary EIS. The two bunds form a footprint of 0.9096 hectares which equates to 0.61% of the CMD (149.567 hectares) as shown in drawing number 7900/33/05-605. This loss for the purposes of flood mitigation is deemed acceptable given the pubic benefit to the State shown in the Net Benefit Assessment by AEC, presented as Appendix D of the NEBP EIS.

The extent of landscaping of the proposed mitigation bunds is detailed within the Landscape Master Plan presented as Appendix P of the NEBP EIS.

The preferred mitigation case shows overall reductions in the peak water levels for the 1% Annual Exceedance Probability events across the flood plain. This is due to the flood mitigation works that increase the conveyance through the development site and therefore reduce the flood conveyance through the northern section of the lower Caboolture River floodplain (north of the Caboolture River).

The changes in the flow velocities within Caboolture River due to the flood mitigation works are insignificant when compared to the existing case velocities.

The peak flood levels will be lowered in much of the surrounding flood plain with localised peak flood level increases occurring only within the site boundary or in locations where existing infrastructure will not be impacted. Conceptual earthworks profiles of edges abutting freehold land are provided in drawing number 7900/33/05-104, 7900/33/05-108 and 7900/33/05-109.

Overall the proposed works represent a net benefit for the community in terms of flooding and therefore is consistent with both local and State relevant legislation, notedly the Shire Plan Policy and State Planning Policy 1/03 '*Mitigating the adverse impacts of flood, bushfire and landslid*e'.

A Flood Hazard Management Plan will be prepared as part of the detailed design phase.

Flood Mitigation Earthworks

The combination of a 1% Annual Exceedance Probability flood runoff event in combination with a 1% Annual Exceedance Probability storm tide event will result in a joint probability which exceeds a 100 year 1% Annual Exceedance Probability design event but is below the 10,000 year 1% Annual Exceedance Probability design event.

The peak surge level generated by a storm will generally occur either just prior to or during the passage of the eye of the storm. The associated flooding is dependent on the path and passage of the storm across the catchment; the longer the river system, the longer the critical storm duration. The critical storm duration in terms of generating peak flood level throughout the Caboolture River floodplain system was found to be between 12 hours and 48 hours, with 48 hours being critical at the river's mouth at Deception Bay (CSC, 1994). Therefore it is likely that any storm surge effects generated by a cyclone would have sub-sided somewhat by the time the peak flood flow reaches the Deception Bay as the 100 year 1% Annual Exceedance Probability storm surge effects the lower 5km of the Caboolture River only.

The actual 1% Annual Exceedance Probability of the combined storm surge and the flood has not been calculated at this stage, but it is therefore a reasonable assumption is that peak sea levels are unlikely to coincide with peak flood levels. Based on this, the storm surge event and the flood event are generally mutually exclusive and the estimated combined probability of the Flood Study undertaken for the NEBP would be closer to a 10,000 year 1% Annual Exceedance Probability event rather than a 100 year 1% Annual Exceedance Probability event.

It is estimated that the total earthworks (cut) for the flood mitigation is 699,000 m^3. This does not include earthworks required for the earth diversion banks. The change to the total cut earthworks for flood mitigation affects the bulk earthworks assessment which was prepared based on the original flood study, and is presented in drawing number 7900/33/05/103 of the NEBP EIS. The change arises from an additional 300mm platform required in the built areas to accommodate the extremely conservative finished design level adopted. An earthworks balance can still be achieved even with an estimated 300m rise of building platforms in fill areas shown in the NEBP Structure Plan, and a revision of calculations for the earthworks balance will be undertaken at the detailed design stage.

Revised drawings are provided regarding the above changes, including 7900/33/05-104, 7900/33/05-108 and 7900/33/05-109.

Technical reports providing flood analyses and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 17 Flood Study EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	NA	Cardno Drawing List
NEBP EIS	Appendix P	Landscape Masterplan
NEBP Supplementary EIS	Appendix E	MIKE21 Flood Study

3.7.2 Stormwater Management

A Stormwater Management Plan (SMP) was prepared as part of the NEBP EIS to address the ToR and was presented as Appendix H1.

Stormwater modelling undertaken using MUSIC as part of SMP considered both the pre-development and post-development case, with the pollutant export load sourced from the *ShirePlan*. The SMP outcome meets the statutory requirements through the application of water sensitive urban design (WSUD) measures, and therefore complies with the water quality objectives for the Caboolture River, under Schedule 1 of the *Environmental Protection (Water) Policy 1997*.

To clarify p. 193 of the NEBP EIS where it was stated that the water quality objectives are not necessarily achieved referred to the use of the MUSIC model to estimate the reduction in pollutants. The limitation of the MUSIC model is that litter, hydrocarbons, heavy metals and faecal coliforms are currently not included in the model and therefore cannot be accurately estimated. MUSIC was therefore used to predict only the reduction of gross pollutants, total phosphorus, total nitrogen and total suspended solids. Additional management measures to prevent water quality degradation from those parameters not modelled were recommended and are detailed in the various environmental management plans prepared for the NEBP development as detailed in Section 5 of the EIS.

The SMP includes treatment of stormwater runoff from the proposed development that will be dependent on the land uses, catchment area and topography. Therefore, each catchment requires a unique treatment train. Treatment trains are a series of stormwater treatment measures located in a catchment to provide a staged approach to removal of stormwater pollutants from runoff. The key measures include (but not limited to) grass swales, bioretention swales and constructed wetlands.

The objective of the conceptual stormwater treatment design is to use the large areas of low lying floodplains for the location of large water quality treatment elements.

Approximately 11% of the NEBP project area will be required for stormwater treatment, with this land predominantly located within the open space component of the NEBP. The existing coastal buffer will be retained and enhanced through revegetation and rehabilitation. No hard engineering associated with stormwater treatment will be undertaken in the CMD, resulting in an positive environmental benefit for the State considering the current degraded system.

The siting and sizing of treatment trains will be finalised during the detailed design of the NEBP development to ensure that treatment trains are suitably separated from the site's ecologically sensitive areas as highlighted in the NEBP EIS.

In conclusion the Proponent commits to the following as part of the detailed design phase.

- Adoption of best management treatment measures to meet stormwater quality targets, including the preparation of a sediment and erosion control plan.
- Adoption of WSUD practices at the street scale to meet stormwater quantity targets.
- Completion of catchment stormwater plans for each development area that adopt the detailed layout (street scale) and address the stormwater quality and quantity design criteria.

To inform further the detailed design pre-development and construction water quality monitoring is proposed. The detail and intensity of the water quality monitoring has been specified in the Environmental Monitoring Program, presented as Appendix H. Water quality monitoring will ensure both a proactive and reactive approach to management of ecologically sensitive areas in addition to the commitments for best management treatment measures.

3.7.3 Groundwater

A groundwater impact assessment was prepared as part of the NEBP EIS and was presented as Appendix H2, as the NEBP project has the potential to impact on the local groundwater regime due to the nature of the development, in particular, the construction of a marina on the south western part of the river.

The groundwater impact assessment describes the existing conditions at the site, including the nature of the aquifers, groundwater stakeholders, groundwater regimes and groundwater chemistry. The groundwater impact assessment was based on the analysing of available information, including historical weather data, previous project investigations, DNRW Borehole Database, a desk study and field investigations.

The current field program included the drilling of 44 shallow boreholes, installations of 9 shallow and 3 deep standpipe piezometers, soil sampling, continuous groundwater monitoring, pump testing and groundwater chemistry sampling. Two two-dimensional saturated-unsaturated cross sectional groundwater models employing SEEP/W were carried out and potential impacts of the marina development on the groundwater flow patterns was discussed.

To determine both the direct and residual impacts to groundwater as a result of the development, ongoing groundwater monitoring is proposed during construction and operation of the NEBP development. Indicative groundwater monitoring is provided in Appendix H of the Supplementary EIS, which shall be further refined in consultation with the DNRW at the detailed design phase.

3.7.4 Water Supply

An assessment of the expected water usage of the proposed development, including the quality and quantity of water supplied to the site (and source) and water conservation and management measures to address infrastructure requirements specified in Section 3.7.3 of the ToR was undertaken to inform the NEPB EIS.

This section has been prepared with reference to the GHD (2007) report entitled '*Environmental Impact Assessment – Water Supply and Sewerage Systems for Northeast Business Park Pty Ltd*', which was presented as Appendix W of the NEBP EIS.

Section 3.7.3 of the NEBP EIS presented the findings of that report in a summary version. The following points are highlighted.

- Water demand has been estimated based on the population projections of the NEBP that total 9,439 Equivalent Persons.

- The Proponent proposes to significantly reduce water consumption by incorporating water saving strategies including:
  - water saving devices;
  - dual reticulation technology;
  - rainwater tanks
  - water conservation education.
- The total the potable water demand has been reduced to 1.3ML/day with a demand for 2.3ML/day of recycled water which includes 0.7ML/day for golf course irrigation when considering water saving strategies in the overall water demand calculations (other than rainwater tanks however the yield from rainwater tanks across the development was determined to be approximately 0.7ML/day with the intention for rainwater usage in washing cloths, hot water systems and basins).

This means that less potable water will be consumed by the development than even the Southeast Queensland's community level 5 water restriction targets of 140L/EP/day with an estimated average 77L/EP/day for residential precincts and 118L/EP/day for commercial/industrial precincts.

3.8 Coastal Environment

Technical reports providing an assessment of the coastal environment which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 18 Coastal Environment EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix G	Community Consultation Report
NEBP EIS	Appendix J	Riverbank Erosion Assessment
NEBP EIS	Appendix L2	Aquatic Ecology Assessment Report
NEBP EIS	Appendix M1	Caboolture River Siltation Study
NEBP EIS	Appendix R3	Dredging Site Based Management Plan
NEBP EIS	Appendix Y1	Marina Site Based Management Plan incorporating a Marina Water Quality Plan
NEBP Supplementary EIS	Appendix F	Supplementary Coastal Processes Report
NEBP Supplementary EIS	Appendix G	Capital Dredging In a Marine Park – Public Benefit
NEBP Supplementary EIS	Appendix H	Dredge Spoil Transfer Pipeline – Review of Environmental Factors

3.8.1 Navigational dredging

3.8.1.1 Tidal Hydraulic and Flushing Impacts

Investigations have been undertaken of the tidal hydraulics and flushing impacts due to the proposed capital dredging within the Caboolture River and are contained within the report entitled '*Supplementary Report on Coastal Processes''* by Cardno Lawson Treloar (CLT),

presented as Appendix F of the Supplementary EIS. The assessment was undertaken using the methodology summarised below.

- Use of modelling of the Caboolture River developed for the previous assessment of siltation within the dredged navigation channel detailed in the report, '*Northeast Business Park - Caboolture River Siltation Study*' presented as Appendix M1 of the NEBP EIS. The model incorporates variables such as tides, winds etc and is calibrated by field measurements taken along four locations within the River and at a site within King John Creek.
- Incorporate boundary conditions based on spring and neap tide flows into the Caboolture River.
- Analyse tidal hydrodynamics changes of the Caboolture River following capital dredging works.

The results of this analysis are detailed as described below.

Tidal Prism Impact

The tidal prism is defined as the volume of water that is drawn into the river from the ocean through the river mouth during a flood tide. The tidal prism has been calculated for existing and post-dredging scenarios at three locations from the Caboolture River mouth to the downstream extent of the NEBP site.

The tidal prism was calculated for the neap flood tide occurring on 22 February 2006 and the spring flood tide occurring on 28 February 2006. Results have shown that the NEBP development and associated capital dredging of the navigation channel within the lower reaches of the Caboolture River is predicted to have only a small increase on the tidal prism. At the mouth of the Caboolture River this is estimated to be an increase of only 2.5% and 2.8% for the neap and spring tide events, respectively.

The increase in tidal prism is due to the additional volume provided by the dredged channel and the improved conveyance of flow through the lower reaches of the Caboolture River following the capital dredging within the navigation channel.

Water Level Impact

The predicted water levels for both the existing and post-dredging scenarios have been recorded at five locations from the Caboolture River mouth to the upstream extent of the NEBP site.

This analysis indicates that the NEBP development and associated dredging of the navigation channel in the lower reaches of the Caboolture River is predicted to have negligible impact on the tidal phase and high tide water levels throughout the River. In particular the following information is provided.

- At the mouth of the Caboolture River (Uhlmann Road Boat Ramp and Beachmere Boat Ramp) the difference between the predicted existing and post-dredging scenario tidal water levels is negligible. The impact to the tidal phase at these two locations is also predicted to be negligible.
- At the confluence of the Caboolture River and King John Creek the impact to the high tide water level and tidal phase is predicted to be negligible. However, there is predicted to be a minor reduction in the low tide water level at this location.
- Within the Caboolture River at the downstream extent of the NEBP site the impact to the high tide water level is predicted to be negligible. The low water level at this location is predicted to be reduced by up to 0.1m during spring tide events. However, there is a well defined channel through this section of the Caboolture

River and the reduced low tide water level is not anticipated to impact on navigation to the marina.

- Within the Caboolture River at the upstream extent of the NEBP site the spring high tide water levels is predicted to be increased by up to 0.03m. The low water level at this location is predicted to be reduced by up to 0.07m during spring tide events. This reduced low tide water level is not anticipated to impact on navigation to the marina.

Tidal Flushing Impact

The NEBP development and associated dredging of the navigation channel within the lower reaches of the Caboolture River is predicted to slightly increase the tidal prism and have relatively minor impacts on the predicted low tide water levels within the River.

The hydraulic modelling presented in Section 6 of the supplementary report on coastal processes indicates that the tidal flushing of the Caboolture River is not predicted to change considerably in the post-dredging scenario when compared to the existing case.

Coastal policy 2.4.7 of the Southeast Queensland Regional Plan identified the increased risk of algal blooms (*Lyngbya majuscula*) associated with the opening of the river to Moreton Bay. Due to the small changes in tidal prism and flows, it is therefore not anticipated that the NEBP development or navigation dredging associated with the development will increase the occurrence of algal blooms. The existing extent of ecosystem health within the Caboolture River has been recorded historically by Healthy Waterways and more recently, as part of the NEBP development proposal by The Ecology Lab in Appendix L2 of the NEBP EIS.

3.8.1.2 Sediment Transport Processes

In general, the dredging of a navigation channel within the estuarine reach of a river can impact on the sediment supply to sand banks within the river and beaches at the mouth of the river. There is also potential for erosion of riverbanks if dredge batters are excessively steep and/or dredging occurs to close to the river bank. An assessment of river and coastal sediment processes has been conducted as described below with full detail provided in Appendix F of the Supplementary EIS.

River Sediment Transport

The supplementary report on coastal processes states that impacts on sediment transport within the river will largely be confined to the banks immediately adjacent to the navigation channel. The dredge area includes adequate batter slopes and buffers to adjacent riverbanks to minimise any riverbank erosion. Morphologic modelling undertaken by CLT and presented in the report, *Northeast Business Park - Caboolture River Siltation Study* dated January 2008 did not indicate that the proposed dredging would have any direct erosion impact on adjacent riverbanks. This report was appended to the NEBP EIS as Appendix M1.

The siltation study advised that there would be redistribution of material from the adjacent sandy bed which would result in siltation of the dredged navigation channel. It was indicated that this would necessitate regular maintenance dredging.

While quantification of impacts to intertidal habitats cannot be achieved through modelling, redistribution of material adjacent to the dredged channel may reduce the inter-tidal habitat area.

Coastal Sediment Transport

Appendix F of the Supplementary EIS reports the assessment of the coastal sediment transport associated with the Caboolture River and likelihood of impacts associated with dredging the navigation channel on sand flats. This report concluded that dredging of an entrance channel from the mouth of the Caboolture River into Moreton Bay would not adversely impact sediment supply to the sand banks and beaches adjacent to the river mouth because the Caboolture River catchment does not supply a significant quantity of sediment to the coast as:

- the relative size of the Caboolture River catchment is small compared to the Brisbane (to the south) and Mary River (to the north-west) which are primary sources of sediment (to the Deception Bay area and Hervey Bay region respectively);
- the tidal delta system of the Caboolture River does not exhibit features that would suggest significant sediment supply to the coast;
- the low wave energy conditions generate low longshore sediment transport rates within Moreton Bay;
- the Caboolture River entrance is relatively stable and there is minimal sediment moving into the estuary during normal tidal conditions in both the existing and post-dredging scenarios; and
- the construction of a weir 19km upstream traps sediment in the freshwater reaches of the river.

While there may be some movement under extreme events, such as flooding, impacts of the dredged channel under such conditions would not be significantly different to the movement currently experienced. Further, while there is a slight increase in peak tidal flow during the flood and ebb tides associated with the proposed dredging works, this is not expected to significantly increase bed sediment mobilisation.

In conclusion, as no impact was determined on tidal flushing and sediment transport as a result of navigational dredging, it is concluded that the ecological values of sand flats within and adjacent to the Caboolture River mouth will be maintained. Section 3.2.6 of the aquatic ecology investigations, presented as L2 of the NEBP EIS, assessed the importance of the sand flats in additional studies with regard to capital navigational dredging and it was concluded that the sand flats are ecologically significant.

3.8.1.3 Dredging Responsibility

The Proponent proposes to fully fund capital dredging as part of the NEBP development proposal. Ongoing maintenance dredging responsibility shall be agreed to between Queensland Transport and the Proponent during ongoing negotiations.

3.8.1.4 Public Benefit

Under the *Marine Parks (Moreton Bay) Zoning Plan 1997*, capital dredging of the Caboolture River for the NEBP is defined as “major works”, that is:

> “…major works, for a zone, means works that are inconsistent with the purpose of the zone and involve the disturbance or alienation of the marine park, including, for example-
> a) the removal or destruction of the substrate, animals or plants; or
> b) the alteration of tidal or natural currents or drainage patterns.
> *Examples of major works-*
> (e) development dredging of a navigation channel or boat harbour.”

The capital dredging proposed under the NEBP proposal is located within a habitat zone of the Moreton Bay Marine Park and within this zone major works are only permitted within a "designated works area". The purpose of a designated works area is defined in section 46 of the zoning plan, that is:

> "…the purpose of a works area is to provide for the carrying out of major works that might disturb or destroy the natural hydrology, or change the natural species composition or productivity of aquatic communities in the area, if the works are necessary for-
>
> a) the public benefit; or
> b) the provision of facilities for use by the public.
>
> *Example of paragraph (a)* – the establishment of transport infrastructure."

Demonstrating that the proposed capital dredging works are necessary for the public benefit or for the provision of facilities for use by the public is required. Appendix G of the Supplementary EIS presents a concise report identifying options for capital dredging in the Caboolture River and addressing the public benefit criteria to support a subsequent application.

Appendix G describes a public benefit results from capital dredging. As set out in NEBP EIS and reinforced in this report, the mix of uses proposed at NEBP operate in a collective fashion, with each use a component of the overall project and contributing to the achievement of the net benefits. Omission or reduction of any one aspect would significantly hamper the development to the extent that the benefits achievable would be reduced.

3.8.2 Dredge Spoil Pipeline

The NEBP EIS provided information on the route of the dredge spoil transfer (DST) pipeline proposed to transfer dredge slurry from capital dredging works to the NEBP project area for use as construction fill, once suitably dried and treated for potential acid sulfate soils. A series of tailwater treatment ponds would dewater the slurry to enable a sufficient grade for establishing building platforms for detached dwellings within Residential Area 2 of the NEBP structure plan, shown as Figure 2 of the existing NEBP EIS.

An assessment of the environmental impacts associated with the proposed DST pipeline has since been undertaken as part of the Supplementary EIS and is presented as Appendix H.

The DST pipeline will involve an establishment, operational and decommissioning phase. The potential environmental impacts to native flora and fauna will not have any additional adverse impact given that the majority of the pipeline will follow the route of the navigational channel where significant dredging works are proposed. Sufficient information has been provided in the existing NEPB EIS and Supplementary EIS and associated reporting to determine the impacts from capital dredging and the portion of the DST pipeline that traverses the dredging area will not result in impacts more significant than those arising from the dredging works. The remaining pipeline extent will traverse additional fish habitat area however as the pipeline is of a temporary nature, will not adversely impact the functioning of the system, particularly due to the lack of seagrass and the rapid colonisation of the system by benthic microalgae and invertebrates.

The majority of the overland route of the DST pipeline is situated within existing clearings within the Farry Road reserve and any disturbance to significant vegetation will be avoided. The final 300 metres of the overland section traverses a mapped area of remnant vegetation (RE 12.1.2 and 12.1.3). Any significant impacts to this vegetation will be avoided by to the extent practicable locating the DST pipeline within disturbed areas and

laying the DST pipeline on the ground surface rather than excavating and burying the DST pipeline.

A monitoring program is proposed to identify:

- any excessive ponding of water upstream of the DST pipeline following rainfall;
- turbidity; and
- dredge spoil leaks within the Caboolture River, the latter also in the overland route.

The Proponent will notify the DEWHA, in addition to those persons and agencies proposed within Element 12 of the Dredging Site Based Management Plan (Dredge SBMP, Appendix R3 of the existing NEBP EIS), in the event of an accidental release of dredge material from the DST pipeline (and dredging activity). Clean up procedures and preventative measures to avoid the occurrence of a similar event, and their success will be provided to the DEWHA. Element 12 of the Dredge SBMP shall be updated prior to works commencing on site.

Assessment of compliance with relevant Federal, State and local legislation has been undertaken to determine the approvals required for the DST pipeline. Approvals required have been tabulated in Section 6 of Appendix H. In summary, resource entitlement and operational works development approvals are necessary for the establishment, operational and decommissioning phase of the DST pipeline.

3.8.3 Riverbank Erosion

3.8.3.1 Boat Traffic Impact

Appendix F of the Supplementary EIS records the investigations of the potential impacts of boat traffic on riverbank erosion due to the expected increase in boating traffic as a result of the development. The proposed development will include 911 marina berths and a further 300-500 dry boat stacker berths and will also include associated shipyard and marine industry infrastructure. It is acknowledged that the proposed development will increase boat traffic between the development site and the mouth of the Caboolture River.

The scale and intensity of the existing maritime infrastructure supports and encourages current boat use within the River. As part of the consultation phase river boat traffic was surveyed with the results tabulated in Section 4.5 Table 47 of the existing NEBP EIS and detailed in Appendix G of the NEBP EIS. Additionally information was given information relating to existing vessel activity, with Appendix G reporting that up to 40 boat movements were recorded on a weekday in 2006.

The precise number and size of vessels using the marina and dry boat stacker berths will be formalised during the detailed design stage of the development. The increased boat traffic within the Caboolture River generated by the development is related to the number of vessels using the NEBP marina facilities and a precise estimate is therefore not available for this assessment. The assessment of impacts therefore relies on assumptions relating to the size and number of vessels using the NEBP marina facilities.

There will be a degree of disparity between the number of vessel movements on weekends and weekdays, with the peak number of vessel movements most likely occurring on weekends. Table 2 of Appendix F shows an estimate of vessel movements that could potentially be attributed to the NEBP development. Essentially a average total of 82 daily boat movements was calculated.

Vessel speed and hull design are the primary factors that determine the size and nature of waves generated as a vessel travels through the water. It is anticipated that the majority of vessels using the marina berths and dry boat stacker will have a length of 8m or greater.

For vessels 8m in length and over there is an existing 6 knot speed limit throughout the Caboolture River.

For the vessel sizes anticipated it is our experience that a typical wave train of 7 to 8 waves would be generated by the boat wash. The waves would have a significant wave height (H_S) of 0.2m to 0.3m with a wave period of 3 to 5 seconds. In comparison waves generated by a 20 knot winds would have a significant wave height (H_S) of 0.1m to 0.2m and a wave period of 1 to 1.5 seconds.

Table 3 of Appendix F shows the estimated number of waves generated on a daily basis due to varying numbers of boat movements and the estimated number of waves impacting the riverbank.

The lower and upper estimates are based on typical wave trains of 7 to 8 waves generated by boat wash. Due to tidal water level variations, it is assumed that minimal waves impact the riverbank at low tide.

Under existing conditions wind waves can also be generated within the river. Figure 7 of Appendix F presents the orientation of the Caboolture River reaches and the roses of wind direction versus wind speed recorded at the Brisbane Airport. Between the NEBP site and the Caboolture River mouth, the major river reaches are aligned in either a north-south or eastwest direction. The prevailing wind conditions and the alignment of the Caboolture River reaches would allow for the generation of wind waves that could impact on the riverbank. It is noted that existing riverbank erosion conditions were assessed as part of the existing NEBP EIS in and detailed in Appendix J of the existing NEBP EIS.

This assessment has assumed that vessels will be operating at a speed sufficient to generate wash. However, speed restrictions do apply within the Caboolture River and for vessels 8m in length and over the speed limit throughout the Caboolture River is 6 knots or no wash.

A program has been included as part of the NEBP strategy to educate boat users travelling between the NEBP site and the Caboolture River mouth of the existing speed restrictions and the impact of boat wash on riverbanks. Moreover it is proposed to direct funding to facilitate a revegetation and rehabilitation management plan, in consultation with the relevant stakeholders to improve severely degraded banks downstream of the NEBP site. Full details of the proposed mitigation measures to limit development induced riverbank erosion are provided in Appendix J of the existing NEBP EIS.

3.8.3.2 Riverbank Protection

The CMD to be protected within the NEBP project area has been revised for clarity as Figure 3 of the NEBP Supplementary EIS, and which primarily but not altogether forms part of the coastal buffer.

Significantly, the coastal buffer as shown by the Structure Plan will remain largely undisturbed, apart from some rehabilitation of previously degraded wetlands, and the creation of the marina and entrance channel. The buffer would also play a part in the treatment of stormwater runoff as detailed in Appendix H1 of the NEBP EIS. No hard-engineered stormwater infrastructure has been designed within the CMD, and water quality will be treated to a standard higher than existing stormwater runoff prior to discharge to waters in an effort to improve the already degraded health of the Caboolture River.

As indicated in section 4.5.2 of the NEBP EIS, a key objective of the NEBP development is to ensure unlimited access by the public within the coastal buffer via a series of community initiatives, for example walking trails, canoe landings, fishing pontoons.

Improved river management through restoration of degraded river habitat has been identified as advantageous by the community who would support sensible environmental practices. 87% of recreational boating and anglers surveyed identified that they would welcome the opportunity to participate in a consultative group or partner with the Proponent to establish a sound river management plan.

The EIS forecast that a river management plan would form part of the re-vegetation and rehabilitation initiatives and that this will be implemented in consultation with key stakeholder representatives to maintain the coastal buffer to reduce river bank erosion and restore ecological values in a degraded system that is currently part of the Deception Bay Fish Habitat Area, and consequently promote safe marine craft movement in the Caboolture River within and downstream of the NEBP project area.

3.8.4 Dredge Spoil Long-Term

Dredge spoil disposal options were considered as part of the NEBP EIS. Residential Area East, as shown on the drawing number 7900/33/05-504 of the NEBP EIS, is the intended emplacement of capital dredge spoil and maintenance dredge spoil prior to its development with residential housing in 2018 to enable a balancing of bulk earthworks to achieve the desired building platforms.

The cut and fill to finished design levels (volumes and areas) is provided in drawing number 7900/3/05-103. In summary 545,304 m^3 of material would be dredged as part of capital dredging works. Maintenance dredging quantities were estimated as part of the siltation assessment, presented as Appendix M1 of the NEBP EIS. On a frequency of two to three years it is estimated that minor and localised maintenance dredging of approximately 40,000 m^3 (approximately 0.5m depth of sediment accumulation within the navigation channel) will be required, particularly between chainages 4000 to 5000 as shown on drawing number 7900/33/01-303.

In addition to the 2-3 year dredging program, dredging of the entire navigation channel will also be required on a five year frequency. The approximate volume of additional dredging is estimated at 220,000 m^3. These estimates of dredge volume are likely to be reduced in the longer term as the dredged navigation channel approaches a dynamic equilibrium with the adjacent banks and flow regimes.

The design dredge depths required to allow underkeel clearance of 3m at lowest astronomical tide to ensure navigational safety, and therefore influencing dredging frequency, were presented in drawing series 7900/33/01-300-317.

Section 3.5.4.2 of the NEBP EIS identified that during the period of spoil transfer and handling from capital dredging, and two maintenance dredging episodes, an understanding of the quantity and characteristics of dredge material will be gained allowing for appropriate designation of a longer term maintenance spoil disposal location ensuring effective and low risk treatment and management. Depending on the quality and quantity of spoil material, the likely management options (in order of preference) are:

- sale for construction purposes;
- sale for fill;
- beach nourishment;
- disposal off site on land purchased by the proponent for the purpose of dredge spoil; or
- storage.

It is expected that before the end of the 10 year period during which maintenance dredge spoil can be disposed of off-site, the issue of dredge spoil management in Southeast Queensland will have been considered by the relevant State agencies, and strategic policy

advice will have been issued. Future beneficial resource use and disposal strategies can therefore be formulated in accordance with this advice.

In the event that this has not occurred, three options are now proposed (in order of preference).

1. **Beach Nourishment.** The Proponent is committed to nourishing the existing degraded beach systems in close proximity to the NEBP development areas which are significant as described in the Riverbank Erosion Assessment, appended to the NEBP EIS. In particular photos are provided to this Supplementary EIS which shows significant loss in Beachmere and further support for a beach replenishment strategy.

   In northern NSW and southern Queensland a very large and ongoing beach nourish program has been initiated, knows the Tweed River Entrance Sand Bypassing Project and it involves pumping sand to the north around the entrance to the Tweed River and depositing it at Kirra Beach and other locations (see www.tweedsandbypass.nsw.gov.au). In other parts of the world beach nourishment is a major tool for coastal management.

   Beach nourishment can be considered as an option to increase the buffer of available sand to accommodate the short term erosion threat and any longer term trends of shoreline retreat. This option would require sand of suitable grain size and quality to be placed on the beach to accommodate short term erosion and offset any long term losses. The quantity and frequency of nourishment would be determined from design storm erosion calculations and shoreline recession rates calculated from a monitoring program. At this time it would also be required to assess the potential impacts of storm surge inundation and mitigate this with the beach nourishment by building dunes of appropriate height.

   Coffey Geotechnics on behalf of the Proponent has undertaken a grain particle size comparison to determine the suitability of using Caboolture River dredge sands for the proposed Caboolture River – Beachmere Renourishment Project. Laboratory testing indicates that the particle size distribution for the sands sampled within the proposed dredge and renourishment areas varies significantly however that this is normal in all alluvial environments where natural sorting of particle sizes occurs when sediment is subject to varying levels of wind, wave, tide and river energies. This report can be provided if requested.

   Additional sites for beach nourishment shall continue to be investigated and subject to the appropriate geotechnical testing and environmental assessment.

2. **At-sea Disposal.** With regard to coastal policy 2.1.8 of the Southeast Queensland Regional Coastal Management Plan, at-sea disposal was not considered a viable alternative for the disposal of maintenance dredge spoil given both political and environmental reasons. Specifically as the at sea disposal would need to be undertaken (for financial viability) within the Moreton Bay Marine Park and as such would be contrary to the values required to be maintained within a marine park and thus inconsistent with the objectives of the NEBP. However should at-sea disposal be supported by the relevant government and community parties, the entity responsible for maintenance dredging shall investigate potential environmental impacts in accordance with the requirements of the relevant authorities.

3. **On-site Disposal.** An area dedicated within the NEBP project area excluding the environmentally sensitive areas will be investigated for long-term disposal of dredge spoil. Such disposal would be the subject of separate assessment process, and would include modification of the landform to achieve immunity from 1% Annual Exceedence Probability flood flows without adverse impacts on flood levels elsewhere.

Further details on the methodology for dredging and the management of potential environmental impacts associated with dredging and dredge spoil disposal can be found in the Dredging Site Based Management Plan, presented as Appendix R3 of the NEBP EIS.

It is noted that Appendix R3 of the NEBP EIS provided a specific response to coastal policies within the Southeast Queensland Coastal Management Plan 2006, replicated only in part in section 4.5.2 of the NEBP EIS which concentrated on the NEBP project area.

3.8.5 Public Maritime Facilities

Community views regarding public access to the river for recreation and boating purposes was determined as part of the community consultation engagement program. The community consultation program engaged with a broad stakeholder base including local community members, interest groups, recreational angling and boating users, local businesses, the commercial boating and building businesses and the general community attending the annual Sanctuary Cove Boat Show.

While a public boat ramp was identified as important to the community through the consultation process, a marina was ranked as mean average 7.9/10 compared to boat ramp as mean average 7.8/10.

A recreational amenity audit of all boat ramps and jetties in the area was undertaken and recorded within the Social Impact Assessment Study, presented as Appendix F of the NEBP EIS.

Local boat ramps and jetties include:

- Banksia Beach;
- Bayview-Wallin Foreshore;
- Beachmere Foreshore;
- Bongaree Jetty;
- Chamber of Commerce Park Boat Ramp- Bongaree;
- Deception Bay Foreshore Esplanade;
- Dohles Rocks Park Boat Ramp – Griffin;
- Donnybrook Foreshore;
- Donnybrook Jetty;
- Monty's Marina – Beachmere;
- Sirenia Marina – boat ramp;
- Spinnaker Park Boat Ramp - Sandstone Point;
- Spinnaker Sound Marina - Sandstone Point;
- Sylvan Beach Esplanade- Bellara; and
- Toorbul Foreshore.

The inclusion of a 300-500 dry boat stacker was identified at the second Community Information Day as a positive benefit by recreational boating users citing that the dry stacking option will provide an alternative to the existing local boat ramps and jetties in the area, as well as the opportunity to launch recreational canoes and recreationally fish from land based fish platforms.

The boat stacker benefits include:

- managed storage facility;
- decreased pressure on existing public facilities; and
- body corporate arrangements will require trailer boat storage within the development as opposed to external private residence storage which could create additional pressure on existing boat ramps.

3.8.6 Lock and Marina

The NEBP EIS assessed the direct and indirect impacts of the marina which culminated in the requirement for a Marina Site Based Management Plan to mitigate and prevent residual impacts associated with marina operations in a relatively undeveloped waterway in Southeast Queensland.

In particular the direct and indirect impact associated with the lock, weir and dry land marina/lake development was assessed in the aquatic ecology investigations, presented as Appendix L2 of the NEBP EIS. Marine plants were mapped in Figure 10 of Appendix L2 to include approximately 0.276 hectares of saltmarsh and 0.829 hectares of mangrove habitat that would be removed as part of the marina construction. This represents approximately 3.96% and 4.45% respectively of mangroves and saltmarshes mapped within the NEBP project area, an acceptable loss considering the net benefit to the public resulting from the operation of a marina in an area devoid of suitable marine facilities to address the increasing demand as shown both through community consultation and the marina demand assessment, presented as Appendix E7 and E8 of the NEPB EIS. Furthermore, the loss would be offset by rehabilitation of wetlands degraded by previous agricultural practices at the site.

The location of the proposed marina is currently severely degraded through past land use practices and from erosion arising from both natural processes and both existing river craft. The NEBP EIS establishes the direct and indirect impacts of the lock and marina, other than ecological impacts, in a series of additional technical reports addressing all matters outlined under coastal policy 2.1.15 of the Southeast Queensland Regional Coastal Management Plan, including:

- surface- and ground-water quality;
- land contamination;
- scenic quality;
- cultural heritage; and
- social and economic need.

Additionally the mitigation measures proposed as part of the NEBP development, including the commitment to protect the riverbank and restore severely eroded areas through appropriate measures in accordance with the approved revegetation and rehabilitation management plan, anticipated as a requirement of a development approval condition, act as a net gain of coastal resources and values supporting the establishment of a lock and dry land marina.

3.9 Environmental Monitoring

An environmental monitoring program has been prepared to support the NEBP Supplementary EIS, and attached as Appendix I entitled '*Northeast Business Park – Environmental Monitoring Program*'. The environmental monitoring program is a management tool used to assist:

- construction and operational staff to identify and minimise the impact to the environment through practical environmental monitoring programs; and
- decision makers to understand the range and detail of committed environmental monitoring programs.

The environmental monitoring program presents the commitments and recommendations made in the NEBP EIS to protect environmental values during the construction and operation of the proposed development. It is intended that this environmental monitoring program will demonstrate compliance with subsequent conditions of approval.

The environmental monitoring program includes monitoring on and off-site where potential environmental impacts have been forecast in the NEBP EIS, and in particular will provide significant data for determining the ecosystem health of the Caboolture River and the effectiveness of sustainable land uses practices for water quality improvements.

3.10 Nature Conservation

Technical reports providing an assessment of nature conservation and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 19 Nature Conservation EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix L1	Terrestrial Ecology Assessment Report
NEBP EIS	Appendix L2	Aquatic Ecology Assessment Report
NEBP EIS	Appendix L3	Matters of National Environmental Significance
NEBP Supplementary EIS	Appendix C	Addendum Matters of National Environmental Significance
NEBP Supplementary EIS	Appendix J	Declared Fish Habitat Area Revocation Support Study
NEBP Supplementary EIS	Appendix K	Vegetation Offsets Proposal

3.10.1 Partial Revocation of the Fish Habitat Area

For the construction of the marina entrance lock and public infrastructure comprising a fishing platform and three canoe landings, it is necessary to revoke a small portion of the declared Fish Habitat Area (FHA). The area to be revoked includes:

- 2500m^2 to establish the entrance to the marina basin and associated water lock;
- 150m^2 to construct a public fishing jetty; and
- 75m^2 to construct 3 small public canoe landings (each having an area of 25m^2).

To demonstrate that the FHA enters Raff Creek, the existing Figure 7 of the NEBP EIS has been revised as Figure 4 in this report.

A Support Study for Partial Revocation has been prepared to provide the necessary information to support an application to revoke this minor portion of the FHA, and this study is presented as Appendix J in this Supplementary EIS. It is noted that all of the proposed infrastructure will enhance public access to the Caboolture River.

3.10.2 Aquatic Ecology

3.10.2.1 Fish Stocks

The NEBP development includes the deepening of an existing channel used for boat navigation and the creation of a marina which will promote recreational boating in the river and northern part of Moreton Bay. Concerns of local recreational boat users raised during

the program of community consultation were discussed in regard to disturbance of fish stocks and the findings of the research undertaken for the NEBP EIS.

Dredging the Caboolture River was identified as a significant benefit by the recreational fishing anglers currently using the river. The following is an overview of the outcomes from the community consultation with recreational boating and anglers as they relate to fish stock:

- 75% of the consulted recreational anglers identified that fish stock sizes were decreasing annually;
- 45% identified crab sizes and capacity to maintain crab potting recreational was important;
- 87% identified that the Caboolture River needed dredging as it is silting up; 35% cited a 'good rain' would flush the river out;
- 88% of respondents stated that they had some 'good fishing spots', especially where the river was deep;
- 98% of recreational fishing anglers stated that unmanaged river boat traffic and 'fast crafts' were damaging river bank stabilisation and recreational angling leisure;
- 94.5% stated that the proposed marina, if managed well would be good for the area;
- 87% of respondents identified that they would welcome the opportunity to participate in a consultative group or partner with NEBP to establish a sound Marine Management Plan.

Key findings and mitigation strategies in Appendix L2 of the NEBP EIS with regard to fish stock and endorsed by the consulted boating and recreational angling community included the following.

- A large mangrove forest south-east of the marina basin will be unaffected by the construction of the marina basin.
- The shoreline is to be protected as a riparian buffer, maintaining the Fish Habitat Area.
- A 100m wide riparian zone is to be rehabilitated and preserved from future development for 9km of the river frontage.
- Water samples collected in the Caboolture River indicate that the current water quality is poor.
- Improvements to Caboolture River's existing water quality will be achieved through best practice quality water management and storm water management systems designed into the development.
- Other parts of the foreshore supporting valuable habitat are to be protected.
- All flood mitigation works will be contained within the boundaries of the development site. The works are to be designed to protect up to and including the 1% Annual Exceedance Probability.
- Less than half of the site will be developed.
- Rehabilitation and conservation programs are currently underway.
- Specialist local community volunteers partnerships with NEBP to trial a number of riverbank stabilisation models.

With increased boat users to the system, impacts associated with waste, specifically sewage and hydrocarbons, and copper from boat hulls may potentially affect fish and aquatic invertebrates.

Dredging has the potential to increase the use of the Caboolture River by both recreational and commercial fishers. It is almost certain that there will be an increase in the use of the Caboolture River by recreational fishers due to increasing population pressures in Southeast Queensland and irrespective of the proposed development. Dredging would benefit the ecology of the river, by causing a small increase in tidal flushing. It is also likely

to make boating safer, with boats less likely to become stranded at low tide. As far as is known, most commercial fishing is done either by larger boats (e.g. prawn trawlers) moored in the river or smaller boats that can be launched from boat ramps. Dredging is therefore unlikely to facilitate access by additional commercial fishing boats. Moreover, a greater recreational presence is likely to assist in regulating commercial fishing on the river.

Dredging will also make the waterways more accessible to predators and potentially have an impact upon juvenile fish stock. Predators currently access the upper river over the shallows at the entrance either at high tide or at night. Currently there are predators that are known to occur in the river (e.g. mulloway, flathead, juvenile sharks) and there is nothing to suggest that there would be an increase in such predators. Additionally, many juvenile fishes and crustaceans use shallow tidal creeks and mangrove forests as refuges from predators. The proposed development aims to restore such refugia on the development site and so would enhance the habitat for juvenile fish stocks.

Potential Acid Sulfate Soils (PASS) released to the waterway during dredging has the potential to negatively impact upon fisheries. Two processes would combine to reduce the risk of PASS on fisheries:

1. the suction dredge would draw up sand and fine sediments away from the river to treatment sites on land, hence removing sediments that could pose a problem in terms of acid release; and
2. marine and estuarine waters are generally slightly alkaline, which would help to neutralise acid waters created by dredging.

Stormwater pollution presents serious threats to fishing resources and fish stock. Detailed consideration has been given by stormwater management specialists to the control of stormwater associated with the development. Use of best practice in urban design coupled with environmental management and ecological monitoring would minimise the risks associated with stormwater pollution at the development site.

Considerable effort was expended during the EIS phase of the project to obtain data on juvenile fish stocks within the river and tributaries. Within the development site there is one tributary (Raff Creek) and numerous tidal channels (collectively termed “waterways”). The results of ecological investigations of the waterways are documented in Section 3 of Appendix L2 to the NEBP EIS. The data indicated that the waterways on the development site are relatively degraded and in some cases dominated by the pest species, mosquito fish (*Gambusia holbrooki*). Notwithstanding this, the waterways do have some ecological values and provide habitat for a variety of native fish and crustaceans. The NEBP EIS has committed to enhancing the ecological values of the waterways on the development site and to a management plan to inhibit the occurrence of mosquito fish at the site, while still implementing appropriate programs for controlling mosquitoes.

Educating boat users as to environmentally friendly boat practices is a vision of the NEBP development, including the provision of sewage pump out facilities and an appropriately managed refuelling dock with the NEBP development. A Marina Site Based Management Plan has been prepared to ensure boat users do not foul the marina, existing as Appendix Y1 of the NEBP EIS.

3.10.2.2 Potential Impacts of Copper from Antifouling Paints

Anitfouling paints are the primary anthropogenic source of copper in the marine environment. Antifouling paints work on the use of copper as a biocide. There are essentially two forms of copper antifouling paints. These are leaching paints and copolymer which release copper at a more even rate. There are numerous factors involved in the rate of copper release involving environmental and non environmental factors such as the method of application.

Copper antifouling paints are currently the main substitute for tributyltin which has been phased out due to its highly toxic effects, particularly on marine invertebrates such as oysters. Copper, however, is not as toxic to a broad range of marine organisms as tributyltin. Therefore new paints have been developed with a range of other properties such as adhesion characteristics to prevent marine growths on boat hulls. New antifouling paints contain properties that regulate the release of biocides (unlike the old paints) and are less likely to cause indiscriminate toxicity effects to non-target biota.

Copper, as the element, does not break down in the environment. Most copper released to water, strongly attaches to other particles, thus reducing the toxicity of copper. Copper and its compounds occur naturally in the environment and are essential to animals and plants. Copper is commonly found as copper (II) in natural waters and the free copper (II) ion is potentially toxic to aquatic life, both acutely and chronically. Its toxicity increases with decreasing water hardness and dissolved oxygen concentration, and decreases with high concentrations of dissolved organic compounds and suspended solids. pH and other factors influence copper toxicity. Copper is expected to bioaccumulate in marine organisms. There are no data available on the short-term and the long-term effects of copper to plants, birds, or land animals (Aust Government - NPI Fact Sheets).

In 2000, the Australian and New Zealand Environment and Conservation Council (ANZECC 2000) and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) established trigger levels 0.3 to 8 µg/L of copper in marine and estuarine waters. Exceeding the trigger levels indicates potential harm to aquatic organisms and should be used to "trigger" a management response, such as improving flushing. In sediments, ANZECC (2000) has identified an Interim Effects Range (Low) of 65 mg/Kg (dry weight basis) and an Interim Effects Range (High) of 270 mg/Kg (dry weight). These values, which are based on total sediments, rather than fractionated by particle size, indicate that concentrations below 65 mg/Kg are comparatively safe, those between 65 and 270 mg/Kg should be of moderate concern, while concentrations above 270 mg/Kg are of concern and should trigger management response, such as:

1. toxicity tests to determine actual toxicity; and
2. measurement of bioaccumulation in organisms occurring in waterways and/or sediments exposed to the increased levels of copper.

In providing some indication of the likelihood of release of copper to the marine environment, a report posted by the Department of Ecology State of Washington has provided some evidence of dissolved copper concentrations within marinas. Studies completed on two marinas in North America over 2006 and 2007 have shown dissolved copper concentrations in marine waters ranged from 1.4 to 12 µg/L variable over locations within the marina. Mean values however vary from 0.79 to 9.2 µg/L within one of the marinas (Cap Sante) to 0.32 to 6.1 µg/L (Skyline) depending on location and tide. While this report concluded that copper levels at the marina entrances were generally meeting marine aquatic life criteria, no information was given on the rates of dissolved copper combining with suspended materials reducing copper bioavailablity, nor on other sources of copper that may be present.

No specific study has been completed that could make a direct comparison with bioavailablity of copper in the waters of Queensland.

It can be concluded that although modern antifouling paints control the release of copper to a high level, the widespread use of copper antifouling paints will release copper into the marine environment. Tidal flushing, and adsorption of copper with organic matter will reduce the level of copper available to organisms present and reduce toxicity effects. Although limited studies have been conducted on the accumulation of copper in the marine environment, recent studies on large marinas have shown copper levels have met aquatic criteria and not likely to produce toxic levels to induce mortality to marine organisms.

Management strategies to prevent antifouling paints from maintenance operations entering the watercourses are detailed in Appendix Y1 of the NEBP EIS.

In conclusion copper from boat hulls has the potential to negatively affect fish and aquatic invertebrates. The proposed development recognises this risk and addresses it in the following ways.

- A large number of boats stored at the marina would be kept within a hard stand facility. Most if not all these boats would not require antifouling treatment because they would not be in the water for long periods of time.
- All maintenance activities associated with the removal and application of antifouling paints would be done within bunded areas and wastes would be removed and disposed offsite. This approach represents best practice in marina management and has been shown to work very successfully at other marinas operated by the project proponent (e.g. Mackay Marina in tropical Queensland).
- Sedimentary deposition within the marina basin would be extremely slow due to the control of inputs from the basin "catchment". Thus, the sediments within the basin are highly unlikely to provide a sink for long-term accumulation of contaminants.
- The allocation of berths within the marina would be done in stages over a significant time period. This strategy, coupled with a comprehensive monitoring programme or water quality and biota within the basin, would enable management to changes in copper concentrations and ecological indicators of the basin.

Recent advances by various manufactures have also identified an ultrasonic antifoulant for boats. This has the potential to minimise the requirement for copper-based paints on boat hulls. For example 'Sure systems' is marketing 'Boat Sure', a transducer unit inside the boat which prevents and removes algae, biofilm, sea pocks and mussels and mollusc. The advantages include:

- No more antifouling;
- No impact on fish or aquatic plant life;
- Optimal boat speeds;
- Lower fuel consumption;
- Improved performance; and
- Environmentally safe.

3.10.2.3 Climate Change

While the ToR did not require climate change to be addressed as part of the NEBP EIS the following clarification is provided.

Particular environmental assessments of the matters required to be addressed by the ToR included the underlying principles of climate change, particularly the following technical studies and management plan make reference to the potential impacts of climate change:

- Flood Study (existing as Appendix I of the NEBP EIS);
- Siltation Study (existing as Appendix M1 of the NEBP EIS); and
- Marina Site Based Management Plan (existing as Appendix Y1 of the NEBP EIS).

These studies and management plan accepted current trends in climate change including sea level rise and more extensive storm tide flooding which informed the design of the NEBP development including:

- a 100m riparian setback from the banks of the Caboolture River (apart from the entrance channel of the marina which includes a lock and weir system);
- the preferred flood mitigation case;
- no urban form below the Q100 flood level; and

- development of a cyclone evacuation emergency response plan.

There is, however, some scope for interaction between capital and maintenance dredging in the lower river and the effects of climate change. This arises because it is difficult to decouple the effects of potential erosion of mangroves and salt marshes due to climate change from potential loss of sediments on adjacent sand flats from dredging. This matter is addressed very carefully in the program of environmental monitoring, which proposes regular habitat mapping of the lower river (based on aerial photography and field inspections) and within two or more control rivers in which no dredging is planned to occur. Comparing the mangroves and saltmarshes at the lower end of the Caboolture River to control systems will provide extremely valuable information on the potential effects of climate change and enable the proponent to implement rapid management actions in response to any impacts detected. This will also make a valuable contribution to coastal management and surveillance monitoring in the northern part of Moreton Bay.

Regarding ecological values on site, most of the foreshores, and hence mangroves and salt marshes of the development site, would be protected within a buffer zone, hence there is little or no opportunity for interaction between the proposed development and impacts of climate change on marine flora.

3.10.3 Terrestrial Ecology

3.10.3.1 Remnant Vegetation Clearing

As detailed in the NEBP EIS, the proposed plan of development will require the clearance of approximately 13 hectares of remnant vegetation situated within the south-western sector of the NEBP site. Based on consideration of a range of environmental, social, economic and urban design factors it is submitted, by the Proponent, that the proposed pattern of land use in the south-western sector of the site is crucial to the commercial success of the NEBP development.

In respect of the proposed clearance of remnant vegetation it is recognised that the Department of Natural Resources and Water (DNRW) is responsible for the administration of the *Vegetation Management Act 1999* (*VM Act*) which regulates the clearance of native vegetation in Queensland. The purpose of the VM Act is to regulate the clearing of vegetation in a way that:

(a) conserves the following—
(i) remnant endangered regional ecosystems;
(ii) remnant of concern regional ecosystems;
(iii) remnant not of concern regional ecosystems; and
(b) conserves vegetation in declared areas; and
(c) ensures the clearing does not cause land degradation; and
(d) prevents the loss of biodiversity; and
(e) maintains ecological processes; and
(f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e); and
(g) reduces greenhouse gas emissions.

The Proponent has consulted with the DNRW concerning the proposed purpose and extent of remnant vegetation clearance that is proposed as part of the NEBP development. The DNRW has provided confirmation in its response to the EIS that it is satisfied that the proposal is consistent with the purposes of the VM Act subject to implementation of an offset that is in accordance with the Policy for Vegetation Management Offsets 28 September 2007. In that respect Proponent have secured an appropriate offset for the proposed remnant vegetation clearance and details concerning the offset are provided in a Vegetation Offset Proposal (February 2008) report prepared by Greening Australia (Qld)

Inc. A copy of this report is provided as Appendix K of the NEBP Supplementary EIS. Some contractual information has been omitted from Appendix K for reasons of commercial confidentiality.

In addition to the specific off-site offsets that will be provided as specified in the Vegetation Offset Proposal, a substantial program of on-site revegetation and habitat enhancement works is proposed within the NEBP's 420 hectares of Open Space Precinct. In the medium to long term the NEBP development will result in a net gain in the extent of remnant vegetation at this locality.

The potential for vegetation clearance works to have an adverse impact on native fauna has also been recognised in the NEBP EIS. As detailed in Element 8 of the CEMP, existing as Appendix X2 of the NEBP EIS, all vegetation clearance works associated with the NEBP development will be carried out using best practice methods, including adherence to the specifications of *Policy 6: Vegetation clearing practices* of the Nature Conservation (Koala) Conservation Plan 2006.

3.10.3.2 Koala Habitat

The NEBP EIS recognises that the NEBP project area is utilised by koalas and that the development will have some negative impacts upon existing areas of koala habitat and in response proposes a range of impact mitigation and habitat offset measures. Furthermore the EIS recognises that site does not form part of a Koala Habitat Area for the purposes of the *Nature Conservation (Koala) Conservation Plan 2006* (the Koala Plan), and as such the NEBP development is not formally subject to the provisions of the Koala Plan. Notwithstanding this fact the NEBP development is generally consistent with the objectives of the Koala Plan in that it:

1. does not involve any development within a formally recognised Koala Habitat Area;
2. provides for the protection of a connected network of on-site Koala habitat, within the 420 hectare system of open space reserves, that has a limited number of road crossings and with linkages to external habitat areas;
3. provides substantial opportunities for Koala habitat rehabilitation and enhancement within the open space reserves, including the retention of approximately 70% of the most important areas of koala habitat on the site which encompass the open forest and woodland communities where the canopy is comprised primarily of species belong to one or more of the following genera: *Eucalyptus, Corymbia, Lophostemon, Melaleuca* and *Angophora*;
4. provides, via its Community Title Structure, opportunities to regulate the keeping of dogs to mitigate the threat to Koala posed by domestic dogs; and
5. provides opportunities, through the NEBP Area Plan, opportunities to implement a range of Koala sensitive design features including:

    - the use of koala friendly fencing within areas of Public Open Space;
    - koala exclusion fencing where appropriate (i.e. along the western boundary of the site);
    - landscaping with native vegetation, including locally occurring koala habitat trees;
    - retention of koala habitat within road verges, district, local and pocket parks and residential lots; and
    - road design, alignment and construction that aims to, where appropriate, reduce speed, increase visibility and provide for safe road crossings.

As detailed in Environmental Monitoring Program, presented as Appendix I, and the Construction EMP [Element 8], a specific program of works will be implemented to:

- ensure that koala, and areas of koala habitat identified for retention, are not physically harmed during the conduct of vegetation clearance works associated with the NEBP development; and
- monitor the response of the local koala population to the habitat enhancement works that are to be implemented within the public open space precincts.

It is also noted that site selected and secured as an offset for the clearance of remnant vegetation, as detailed in a Vegetation Offset Proposal report, contains koala habitat. The program of works that are to be implemented as part of this offset program will be of benefit to the conservation of koala at the regional level.

In summary, the NEBP proposal recognises and provides responses to the site's koala habitat values that satisfy the requirements of the Koala Plan.

3.10.3.3 General Habitat

The NEBP EIS recognises that the NEBP project area provides habitat resources that are exploited by a diversity of terrestrial wildlife species and that the NEBP development will have impacts upon some of those resources and upon some local wildlife populations.

The NEBP EIS also recognises that the NEBP project area has a history of disturbance and changes in land use, leading to substantial and often dramatic changes in the site's terrestrial wildlife habitat values. At present the majority (approximately 78%) of the NEBP project area supports grazed grassland habitats which have been actively established on land that was previously used for exotic pine plantation purposes. The balance of the site is comprised of a mixture of terrestrial and intertidal habitats that vary in terms of their ecological condition and functions, but all of which have been subject to various forms of disturbance in the past (for example, vegetation clearance, drainage alterations, live stock grazing, weed invasion etc).

The NEBP structure plan makes specific and substantial provisions for the retention and longer-term enhancement of key areas and aspects of the site that are considered to be of importance to the persistence of local terrestrial wildlife populations, including:

- the establishment of Open Space Precincts which encompass approximately 420 ha of land or 55% of the site area;
- the retention and enhancement of a linked network of native wildlife habitat that will facilitate the movement of wildlife within and through the NEBP site;
- provision for substantial enhancement of the Caboolture River riparian zone which is the focus of a major regional ecological corridor linking Moreton Bay with the hinterland; and
- the active and on-going management of invasive species (e.g. Feral pig, Groundsel bush, Water hyacinth, Camphor laurel and Chinese elm) which threaten the long-term ecological integrity of the site's ecosystems.

The response of native terrestrial wildlife species to the NEBP development will be variable. Some species of wildlife that currently utilise the site may not respond favourably to the changes that will be associated with the NEBP development and are likely to experience a reduction in abundance (e.g. Eastern grey kangaroo and Brown quail). Whilst other native wildlife species, such as those reliant upon intact expanses of riparian vegetation (e.g. the Ringtail possum and Azure Kingfisher) are likely to respond favourably to the extensive program of revegetation works that is proposed.

In respect of specific wildlife species the following responses are provided.

Kangaroos

The NEBP project area supports a population of Eastern grey kangaroo (*Macropus giganteus*) which in recent times has benefited from the increased availability of foraging habitat that has resulted from the harvest of commercial pine plantations and the subsequent active establishment of grassland habitat. In that respect recent and existing land use practices have resulted in an increase in the size of the local eastern grey kangaroo population.

The NEBP development will result in a substantial reduction in the extent of grassland habitat at the NEBP site which will lead to a reduction in the size of the local eastern grey kangaroo population. Notwithstanding that fact, substantial areas of suitable habitat for the local eastern grey kangaroo population will be retained within the Open Space Precincts which encompass approximately 420 ha of land or 55% of the site area. As detailed in the Open Space Landscape Master Plan a substantial area of habitat will be retained at the site for grassland dependent species. This habitat will, in combination with available habitat located on adjacent land within the Caboolture River flood plain, be of sufficient size to sustain a local population of eastern grey kangaroo at the site. In that respect it is noted that the spatial configuration of the Open Space Precincts will facilitate the movement of species such as the Eastern grey kangaroo between areas of on-site and off-site habitat.

It is also recognised that the NEBP development will introduce a range of urban land uses and activities which have the potential to cause conflict with native wildlife species such as the Eastern grey kangaroo. For example:

- increased road traffic through the site will increase the risk of collisions between Eastern grey kangaroos and vehicles using the local road network;
- inappropriate keeping and handling of dogs will increase the risk of injury/harm to both Eastern kangaroo and dogs; and
- Eastern grey kangaroos will become habituated to the presence of humans leading to an increased potential for injury/harm to be caused to residents/visitors by aggressive kangaroos.

The above potential will be recognised and responded to in the detailed design phases of the NEBP development and in various environmental operational phase management plans that will be developed and implemented for the Open Space Precincts. The efficacy of these management will be assessed on a regular basis and where required adaptations to the management plans will be developed, in consultation with relevant authorities, and implemented. This will include the conduct of regular surveys of terrestrial fauna populations utilising the Open Space Precincts of the NEBP development, as specified in the NEBP Environmental Monitoring Program presented in Appendix H

Eastern Kingfisher

The potential impact of the NEBP development upon a local population of Eastern kingfishers that are associated with the Caboolture River was raised as a matter of concern. It is assumed that the submission was referring to the Azure Kingfisher (*Alcedo azurea*) which is known to nest within, and forage along, the banks of the Caboolture River.

It is recognised that the establishment and operation of the marina will result in some loss and modification of potential nesting and foraging habitat for the Azure kingfisher. In this respect it is noted that the entrance to the marina basin is located at a point along the Caboolture River that is devoid of riparian vegetation, subject to bank slumping and erosion and of limited habitat value to the Azure kingfisher and other riparian specialists.

Overall the NEBP development is likely to result in a substantial improvement in the habitat values of the Caboolture River, to which the NEBP project area has approximately 9,000 m

of frontage. With the exception of the entrance to the marina basin, a minimum 100m wide and revegetated buffer to the Caboolture River will be established as part of the NEBP plan of development. In addition to the substantial enhancement of the riparian habitat values that will result it is anticipated that these revegetation works will assist in the stabilisation of the banks of the Caboolture River and the security of nesting sites for the Azure kingfisher.

3.11 Social

An extensive community engagement exercise was undertaken between October 2007 and the present day – a component of this comprised the EIS consultation undertaken in two key phases.

During the ToR period, community consultation built on the multi channelled engagement undertaken in phase one, and participatory development communication was selected as the best fit consultation practice. The program and methodology were consistent with the Environmental Protection Agency guidelines.

This phase of consultation utilised a range of tools including face to face consultation; workshopping mitigation strategies for identified impacts; consultation with Traditional Owners; site tours and impact solution processes, attitudinal surveys and engagement with local historians and federal, state and local government agencies. The second phase consultation program is detailed in chapter 4 and chapter 5 of the Community Consultation report, presented as Appendix G of the NEBP EIS.

To adequately respond to section 4.10 of the ToR, in addition, a Community Context Study, presented as Appendix F of the NEBP EIS, was undertaken. This was carried out by a separately from the community consultation exercise and by a different consultant team. This was strategically determined as the best option as it would enable an independent lens to be applied to the identification of local issues and opportunities.

3.11.1 Community Consultation

The outcomes from the community consultation study were shared between the consulting teams and were aggregated to inform the master planning for NEBP, identify potential impacts and remediation strategies and respond to the ToR. The information provided below provides a comprehensive assessment of the community findings and remediation strategies proposed to address the potential community impacts, which was detailed in Section 7 of Appendix G of the NEBP EIS.

The outcomes from the community context study (including workshop outcomes) have been specifically referenced in chapter 4, pp 234- 244. Consultation findings to inform EIS technical studies were provided to the study team including planning, technical, economic, environmental and social specialist consultants. A summary of consultation is provided in EIS Executive Summary pp 9-10 and detailed in the NEBP EIS pp 14-16.

Given the initial negative media and community comment when the project was first announced, a surprising element which emerged from the consultation process was the overall attitudinal change towards the project and the level of excitement regarding the potential social environmental and economic opportunities resulting from the proposed development. Appendix L provides a community interview DVD which is testimony to the above consultation findings.

Of particular note was the perception that this project would create or leverage a regional profile or ‘recognisable regional destination’ for Caboolture. It was also frequently expressed by residents that as a result of the development, this would increase pride in their community, while retaining the key values that are important to them.

In essence, this community attitude encapsulates the success of the NEBP in integrated planning and design that has been based on the following:

- the principles of self containment in terms of local community, social, human services and recreational, cultural and economic sustainability needs; and
- the philosophy of inclusive community engagement to respond to community and key stakeholder views, concerns, suggestions and participation throughout the consultation phase.

By the close of the EIS study, the outcomes of the engagement process also included identification of community issues and specific technical issues. Issues raised, both positive and adverse, were considered and have been addressed in the EIS.

Summary of Findings

The combined outcomes of the community consultation and context study indicated a high degree of support for the NEBP project, with overall attitudes towards the development being recorded as 63 per cent positive and 33 per cent neutral. Those potential benefits most readily acknowledged by the community included the social and economic net benefits, social lifestyle benefits and economic benefits to the region. The key social issues identified through the combined outcomes of the community consultation included traffic impacts.

The following is an overview of the outcomes from community consultation.

Phase One

The first phase which was undertaken between September 2006 and January 2007 was delivered during the Draft ToR to ensure that the community was aware of the EIS process, informed about its key components how it would be undertaken and ways that the community and interested stakeholders could participate in the EIS consultation process. It also provided a range of opportunities for community feedback and allowed community input into the NEBP EIS.

The process recognised a diversity of community stakeholders and devised a range of communication tools that were suitable to their particular needs. Chapter 3 of the consultation report, presented as Appendix G to the NEBP EIS, provides a greater depth of information about this stage of the consultation process; however in summary the community consultation incorporated the resident and business communities, special interest groups; media, government agencies and elected representatives.

In January 2007 the preliminary findings from the phase one engagement indicated that majority of community representatives who had attended were from the area closest to the site (76% from Burpengary) and 98% of the attendees recorded positive comments for the development or indicated their support for NEBP (translating as 362 statements of support).

The attendees saw the marina with its associated lifestyle benefits; tourism and enhancements to the regional profile and economic benefits/job creation as the key benefits likely to accrue to the development. Specifically they recognised the importance of employment creation, opportunity for lifestyle amenities to be brought to the area (passive and active recreation, cafe and dining precinct), increasing use of the river and building capacity in the community).

The issues that emerged from this initial phase of consultation were drawn from the 23 respondents who recorded negative comments and they were integrated into the key issues section of the community context study, specifically:

- marina and residential access off Buckley Road and access off Uhlmann Road (36%) causing traffic congestion;
- that the development might become 'just another Narangba' (15%);
- noise and dust during the construction phase (10%;
- preservation of environmental/wildlife habitats (10%);
- flooding and storm water management (7%);
- dredging (6%);
- disruption to fishing activities and habitats (6%);
- living near a high density development (2%);
- safety of children resulting from bike and horse riders in the surrounding streets (2%); and
- business competition (1%); and
- heritage preservation (1%).

With respect to the social aspects of the draft ToR, specific issues were raised during consultation relating to identifying the social impacts and the increased amenity of impacted users were as well as issues of economic development and tourism.

Phase Two

During the ToR period there was a second phase of community consultation which built on the multi channelled engagement undertaken in phase 1, participatory development communication was selected as the best fit consultation practice. The program and methodology were consistent with the Environmental Protection Agency guidelines.

This phase of consultation utilised a range of tools including face to face consultation; workshopping mitigation strategies for identified impacts; consultation with Traditional Owners; site tours and impact solution processes, attitudinal surveys and engagement with the recreational anglers, boating users, local business sector and federal, state and local government agencies. The second phase consultation program is detailed in chapter 4 and chapter 5 of Appendix G of the NEBP EIS.

Community Open Days

The information collected during community open days falls into two categories; either issues relating to the development or a wish list of elements that the community representatives would like to see included in the development.

The key issues raised during this phase of the community consultation included:

- traffic issues – noise, congestion, use of local roads/capacity (Buckley, Coach and Buchanan Roads and Trafalgar Drive);
- sports fields on land abutting local residential properties (Trafalgar Drive)– noise and light issues;
- drain on existing local infrastructure i.e. Primary and High schools and hospitals;
- need for extensive public transport networks, bike and pedestrian routes;
- the need to enhance public access to the river
- implications of dredging
- concern about wildlife/riparian habitats; and
- preservation of indigenous, Australian South Sea Islander and early European heritage.

Relatively few issues were raised with respect to social impacts of the development with the key exception of the reduction in residential amenity that may arise from increased traffic on local roads. Predominantly the feedback that was received with respect to social issues related to a desire to be further involved in the project and environmental

rehabilitation schemes or promulgation of amenities that should be included in the development, particular reference was made to:

- new schools;
- new libraries;
- childcare facilities;
- employment and skills training;
- boutique shops;
- dining facilities; and
- recreational amenity including house boat hire, picnic areas, bush tucker trails, bike and walking trails, horse riding facilities and BBQs.

Indigenous Community

During this phase there was also a strategy of engagement with appropriate representatives from the local indigenous community, including Traditional Owners the Gubbi Gubbi people – which culminated in the creation of a Cultural Heritage Management Plan. A summary of this consultation is included in chapter 4 of the community consultation report pp 266 – 273, existing as Appendix G of the NEBP EIS.

Community Attitudinal Survey

During this phase of the consultation exercise a community attitudinal survey (detailed in chapter 4 of the Appendix G of the NEBP EIS, pp 274- 309 and pp 341-355) was undertaken with local residents from Burpengary. This survey requested respondents to rank the provision of a series of nine potential facilities to be included in the development as well as asking open ended questions about the projects potential benefits and limitations. Specifically there was strong support for the inclusion of:

- cafes, restaurants and picnic areas (mean score 8.6/10);
- yacht clubs (mean score 8./10);
- mixed residential housing (mean score 7.9/10;
- golf course (mean score 7.6/10);
- community centre (mean score 6.9/10);
- marine repair facility (mean score 6.8/10);
- hotel (mean score 6.7/10); and
- conference centre (mean score 6.2/10).

The greatest benefits perceived through this survey were encoded as relating to employment and local economic benefit; community facilities and infrastructure; leisure and recreation and mobility and access. Comparatively few limitations were listed but those relating to the natural environment (i.e. depth of the river, dredging and low lying flood plains) and social infrastructure (no high rise buildings, not a yuppie estate and differentiation from Morayfield Shopping Centre) were the most frequently recurrent.

There was also an opportunity for additional comments, many of these reflected requests for additional social, recreational and community infrastructure – boat ramps, childcare facilities, river access, boutique shops, public transport, sports and playgrounds.

Community Consultative Committee

The Proponent established a Community Consultative Committee comprising the membership of key environmental groups and local residents. The recommendations from this group have been summarised on p 325, chapter 4, of the community consultation report, and with respect to social impacts and issues they recommended the inclusion of BBQ and picnic areas, the provision of a public boat ramp and fishing jetties, covered outdoor performance amphitheatre, dog off leash areas, walking trails and covered

playgrounds. They also advocated for the inclusion of public art, inclusion of a community garden in higher density residential areas, an indigenous cultural and education centre and bus access to the site.

Focus group sessions and site tours

Consultants from various specialist disciplines attended workshops to work with local residents and recreational anglers and boat users to discuss positive and negative impacts identified in the first phase of the consultation process. The workshops provided an opportunity for consultants and respondent community members to jointly develop impact mitigation strategies to inform their reports. Discussions included traffic impacts and connectivity, river use and fish habitat, construction, built form, mixed industry use, cultural heritage, and recreational amenity.

Business community

A series of local business community presentations and discussion sessions were provided to attain local business community view of the proposed development, identify positive and negative impacts and to discuss potential mitigation strategies to ameliorate identified impacts, inform mixed industry use design and planning and reduce potential for duplication of regional business activity. Business sector responses included statements of support for the project, sighting that the proposed development will increase the prosperity of the region, attract jobs provide self containment in the area and a diversity of businesses and commercial interests; and will provide for the growing demand of the marine industry. Concerns raised included; “not another Narangba, a compliment rather than duplication of businesses and industries in the region, affordability of mixed industry and business space”.

In the second phase of the consultation program local businesses and the local community overwhelmingly (5 to 1 comments positive versus adverse impacts) endorsed the proposed mixed industry and business design proposal, sighting mixed lifestyle amenity and commercial business opportunity within the proposed MIBA’s, proposed landscaping and parking and diversity of commercial and industry offer. Consultation with businesses is detailed in pp 274 – 283, chapters 3 and 4 of Appendix G of the NEBP EIS.

A strategic Business Network has now also been established under the chairmanship of former Mayor Joy Leishman. Membership details are extensive and recent letters of support have been received from a diversity of businesses within the locality. :

3.11.2 Agency Consultation

The community consultation program embraced on-going consultation with MBRC as well as nineteen State Government agencies, specifically the Queensland Departments of:

- Communities;
- Emergency Services;
- Health;
- Industrial Relations;
- Employment and Training and the Arts;
- Environmental Protection Agency;
- Housing;
- Local Government and Planning, Sport and Recreation;
- Main Roads;
- Policy;
- Primary Industries and Fisheries;
- Tourism, Fair Trade and Wine Industry;
- Treasury;

- Emergency and Mines;
- Natural resources and Water;
- Premiers and Cabinet;
- State Development, Trade and Employment;
- Transport; and
- Urban Management.

These agencies were invited to a series of 'All Agency' briefings and were able to visit the site for a guided tour prior to a formal presentation with further opportunities for questions and answers.

The ToR specifically requested consultation with the Department of Communities. The Hornery Institute used its best endeavours to secure a meeting with any representative from their team; however the study period coincided with the equine influenza crisis and therefore the Department was under considerable pressure and was not able to meet within the timeframe.

A copy of the report was sent to the Department of Communities ahead of lodgement to afford the opportunity for comment, however non was forthcoming and the Department has not subsequently requested any further information. The Proponent (and the Office of the CG) were also made aware of the inability to effect this consultation at the time.

Local consultation was also undertaken to inform the key issues and opportunities assessment within the community context study. The local agencies involved in this exercise were:

- Community Renewal;
- Brisbane North Institute of TAFE; and
- Skillstech Australia.
- Caboolture Library Services;
- CentreLink;
- Caboolture Family Haven;
- Deception Bay One Stop Shop; and
- Caboolture Business Enterprise Centre.

Interviews with Government Agencies and peak bodies assisted in determining key local issues in the area, identifying opportunities that the development of NEBP could bring to the area and consider the future provision of services to the anticipated resident and workforce populations.

Recommendations to the Proponent about the required provision of social infrastructure were primarily based on:

- the principle of self containment for local needs that was established by the then Caboolture Shire Council; and
- the benchmarks that were established in the Social Infrastructure Implementation Guidelines.

A further set of recommendations indicated an extended range of services that would support the place brand being developed for NEBP and the anticipated visitor audiences.

The recommendations made to the client were indicative of the services that would be required by the mature population and were intended to inform the master plan. That is allowing a sufficiency of land to be allocated in appropriate locations to enable social and community infrastructure over time.

It has been understood by the developer that the range of social, community and recreational infrastructure that would optimally meet the needs of this community must be provided through a combination of:

- developer contribution;
- private enterprise; and
- some limited delivery by State Government in the future which will be subject to further discussion.

3.11.3 Community Context Study

The key findings from the community context study, existing as Appendix F of the NEBP EIS, mirrored very closely the material that was collected through the community consultation process.

Specifically, both sets of data collected have indicated that the community perceived the following potential benefits, as detailed in Appendix F of the NEBP EIS impacts and mitigations strategies, pp 150-154:

- destination lifestyle infrastructure – new lifestyle precinct and recreational amenity;
- cultural heritage preservation; and
- employment and economic benefits – regional self containment and connectivity.

Both sets of data collected have indicated that the community perceived the following potential social recreational amenity and experience benefits:

Projected Lifestyle Preferences consultation, pp 99-100 of Appendix F of the NEPB EIS, identified the following preferred lifestyle experiences in terms of the most popular social and recreational options relevant to the NEBP development, participants' preferences can be summarised as follows.

<u>Outdoor recreational activities</u>

- Picnicking.
- Walking / walking groups.
- Fishing.
- Swimming.
- Dog walking.
- Sporting clubs (e.g., football, netball, cricket).
- Golf.
- Bush walking.
- Tennis.
- Jogging / running.
- Skateboarding.
- Cycling.
- Canoeing.
- Kayaking.

<u>Other recreational activities</u>

- Shopping.
- Dining and eating out – particularly outdoor dining, farmers' markets / local produce outlets, seafood restaurant, family restaurant, take away outlet.
- Live bands / music performances.
- Learning for leisure – particularly local history and heritage and local animals and habitats.

- Community centre facilities and activities.
- Dog off leash area.
- Outdoor community / public spaces.
- Conservation park / environmental reserve.
- Bushwalking tracks.
- Youth centre and activities.
- Swimming pool.

Desired outdoor and recreational facilities

- BBQ / picnic area.
- Local / regional parklands and reserves.
- Cycling / walking paths.
- Playing fields/sports grounds.
- Playground.
- Tennis courts.

Similarly the data supports the identification of the following potential negative social impacts as identified by the community, pp 150-154 of Appendix F of the NEBP EIS:

- *concerns regarding proposed industrial land uses – concern about noise and emissions;*
- *long term increase of private vehicles using local roads as a 'rat run' or short cut;*
- *public transport options;*
- *walkability; and*
- *local job opportunities.*

The attitudinal survey further confirmed the community aspiration that had been articulated in the other facets of the community consultation as well as those determined through the social impact assessment workshops.

Key elements identified in both reports included:

- employment and training opportunity;
- destination lifestyle option; and
- community participation in site decision making.

Both sets of data have been used to inform the final proposed master plan for NEBP, specifically with respect to:

- urban design; including social infrastructure needs;
- community nodes;
- social, community and recreational amenities/spaces;
- informing the understanding of affordability; and
- mitigation strategies.

3.11.4 The Landscape Master Plan

Integral to the consultation exercise was the community engagement with broad community representatives including recreational and maritime interest groups to identify preferred use of public space and amenity requirements.

The lifestyle in Caboolture is heavily influenced by the availability of recreational assets and opportunities and sport is important to the existing way of life for many families in the catchment.

The community engagement undertaken by Three Plus combined with the lifestyle profiling of the existing and emerging community that informed the community context study re-enforces the significance of sport and outdoor recreational opportunity. Specifically it identified the following as important to the established population:

- walking/dog walking;
- watersports – canoeing, kayaking and boating;
- picnicking and BBQ
- cycling;
- fishing;
- swimming;
- formal sport (cricket, football (league/ AFL), tennis, touch football, lawn bowls, netball); and;
- gym activities.

Lifestyle profiling of anticipated community cohorts indicated a general alignment with these themes as well as highlighting golf and children's activities across all sporting domains. Further information about these projected lifestyle preferences can be found in section 4.5 of Appendix F of the NEBP EIS. The community context study undertook a social infrastructure audit which identified the existing sporting and recreational infrastructure under the headings of major sports infrastructure, parklands and park facilities. The spatial distribution of existing assets is illustrated in Figures 63 to 65 of the community context study and their street address is documented in appendices 11-13 of that document.

To establish the existing gaps in service provision and identify the additional infrastructure required to meet the needs of the emerging resident base comparative standards were listed applied from the Social Infrastructure Implementation Guidelines July 2007, or by reference to the established provision throughout the former Caboolture Local Government Area. This assessment is tabulated on p. 134 of Appendix F of the NEB EIS and formed the basis of the recommendations made on p. 138.

The recommendations made were divided into required elements; those needed to redress a deficit or meet emerging needs to ensure any negative impacts on existing infrastructure were reduced and desired elements (which would meet the lifestyle intent of the development).

A Landscape Master Plan based on the existing sport and recreational opportunities in the Shire and community expectations of the NEBP development, was presented as Appendix P of the NEBP EIS.

The Landscape Master Plan defines the opportunity for future development of a sports and recreation facility on the principle of self containment in terms of local community, social, human services and recreational, cultural needs. The internal population of NEBP and adjacent areas could be expected provide a potential demand for such facilities.

The NEBP Landscape Master Plan suggests a number of potential sports opportunities but states a number of times that "the exact nature of the sports facilities will be determined in consultation with the Local Authority on a future needs basis" (p. 30) or similar. This statement was included subsequent to draft stage consultations with MBRC Recreation Planner Carly Jeavons and other officers to allow for future determination of the need for and type of sports facilities required. The Officers enunciated the facilities based at the nearby Caboolture Regional Aquatic Leisure Centre site at Uhlmann Road, Burpengary would be the primary community sports node within the area. Therefore the NEBP Landscape Master Plan illustrates some indicative fields and courts only that may support the needs and demands of future residents and workers within the development and supplement the Uhlmann Road facility if required.

It is clear that the initial public consultation responses formulating the top ten recommended project facilities from the survey respondents were referenced in developing the draft of the Landscape Master Plan, where relevant, which was refined in response to feedback from public review forums, which were generally positive to that proposed. These included the following.

1. *Cycling and Walking Tracks (7).*
2. *Horse Riding Track (6).*
3. *Boat Ramps (5).*
4. *Retirement Village (4).*
5. *Boutiques Shops (4).*
6. *Marina (3).*
7. *Childcare Centre (3).*
8. *Traffic Flow and Parking (3).*
9. *River Access (3).*
10. *Covered Playgrounds.*

The Landscape Master Plan addresses the first preference by including an extensive network of cycling and walking tracks throughout the public open spaces and within the proposed road systems. These networks assist in the facilitating the 9th recommendation of "River Access".

A horse riding track was a popular response from current residents adjacent to the site. The riding of horses over the existing site has been an informal recreation use and the preference for a horse riding track appeared to be a reflection of the desire not to lose this informal use. Consultation with then Caboolture Shire Council officers concluded that with the provision of horse trail networks within the shire and the nearby regional equestrian centre, this pursuit was adequately and more appropriately catered for elsewhere within the MBRC. Therefore no provision was incorporated within the Landscape Master Plan.

Preference 10 for covered playgrounds has been addressed by the recommendation of a playground within the Heritage Park concept (p. 35), the Marina Precinct (p. 62), and Local Parklands (p. 66), further detailed in Appendix P.

Appendix F of the NEBP EIS identified kayaking and canoeing as the most popular water sports. The Landscape Master Plan identifies this preference and caters for it by integrating with the proposed Caboolture River Canoe Trails and providing landing facilities (p. 61) at the Heritage Park, near to the Environment Centre, and at the Riverside Park. This allows waterborne access from outside the site to significant public recreation site and experiences within the site.

Interestingly in Appendix G of the NEBP EIS it is particularly noteworthy that following the community consultation process was the "perception that this project would create or leverage a regional profile or 'recognisable regional destination' for Caboolture. It was frequently expressed by the community that "as a result of the NEBP development, this would increase community pride in their community, while retaining the key values that are important to them" suggesting a wide user catchment.

We note the planning matrices in Appendix P of the Landscape Master Plan were intended as design tools and were included in the report for incorporation in future design processes for the detailed design of open space and its associated facilities. For individual recreation activities a 'checklist' of physical requirements, potential impacts, support facilities and compatible activities can be extracted from the matrices to ensure that the detailed design process addresses the inclusion and catering for appropriate activities to the particular site under design.

3.11.5 Community Remediation Strategies

Section 7 of Appendix F of the NEBP EIS includes an assessment of the potential impacts that will arise from the development and operation of the NEBP, and proposes remediation strategies (following the community consultation outcomes in Appendix G of the NEBP EIS).

Through the collaborative framework, many of the issues identified as potentially impacting the life of the community were referred to the appropriate consultation team and strategies for their remediation incorporated into their approach to the project and its design.

The potential impacts identified have been classified under the headings land use and urban design, movement, social infrastructure, economic development and construction issues. The remediation strategies proposed are summarised in the right hand column of the tables located on pp150 – 154 of Appendix F of the NEBP EIS, however they are summarised below for convenience. The impacts identified in the community context study are aligned with those that were expressed throughout the community consultation process.

Table 20 Community Identified Impacts and NEBP Remediation Strategies

Land Use and Urban Design

It is recognised that the immediate area surrounding the site is rural residential in character – once it is completed, NEBP will transform the character of the area through the development of residential, employment and lifestyle opportunities on what is currently fallow land.

Impact	Remediation
Inclusion of industrial land uses is creating emissions and noise	A clean, green focus for the MIBA has been determined and will be policed by the proposed Body Corporate over time
Increasing urbanisation leading to a loss of open space and increased urban sprawl as well as loss of semi rural character and appeal	Currently public access to the site is limited and its utility as open space is perceived rather than real. The inclusion of regional parkland space, open space corridors and buffers will increase the public accessibility to the site as well as mitigating the perception of urban sprawl. Further detail is contained in the Landscape Plan and master plan. The MIBA has been located to the north of the site away from existing residential areas to ensure the character of their immediate environment is preserved as far as practicable, this is expressed in the Master Plan. Issues of character and appeal were discussed with the local residents during the Community Consultation and did not feature as an issue of concern to them. The development of the site will open up public access to the river and offer residents from the region increased riparian amenity.
Concern relating to the height, scale and urban form and design integrity of buildings	Design guidelines will be developed for the site and control will be maintained by the body corporate. This issue did not emerge strongly through the community consultation, however it is recognised that the scale of the proposed development is significant. The incremental delivery of the NEBP over an extended timeframe places it within the broader context of regional growth and the staging strategy allows for a gradual build up in the level of activity on the site. The design and location of key buildings on the site has ensured that no significant views have been obscured and no shadowing of existing residences occurs. During the cultural probe the issue of height versus urban sprawl was discussed by some residents, with a preference for well designed and appropriately located height being expressed.

Co-location of uses within the site – juxtaposition of residential and industrial buildings	The Master plan has considered the co-location and juxtaposition of uses and has already made changes with respect to proposed uses that were causing concern to the local community (ie location of sports fields). Buffer zones have been used where required to increase the physical and perceptual distance between residential and MIBA uses.
Integration with surrounding communities	A range of physical, and experiential strategies to ensure optimal integration with the surrounding area have been proposed including: • Foot and cycle paths that connect into the surrounding community; • Public transport connections that service the site and the surrounding community; • An early on site community facility with activity program to invite participation from the surrounding community – this community has recently been involved in making a community film and will be offered further events and activities throughout the construction phase to encourage their early adoption of the development. The development of employment and skills training programs has already commenced and is involving a number of local providers and community members.

Movement

It is recognised that traffic congestion at peak periods is already an issues for residents and businesses and many neighbourhoods experience problems with trucks using freight routes. East –west road connections between communities on either side of the Highway are poor and public transport is inadequate

Impact	Remediation
Long term increases in private vehicles using local roads and creating 'rat runs', leading to loss of residential amenity and congestion	These issues have been dealt with as a part of the transport study and the construction plan. Extensive consultation with the local community has already occurred to determine their concerns and consider the most appropriate responses. The intent is for construction traffic to use Buchanan Road with Buckley Road as a secondary access to the residential area and marina. Traffic modelling indicates that longer term impacts will be limited to the immediate area of Buchanan, Buckley and Uhlmann Roads.
Capacity of local and regional road network to handle increased journeys in peak periods	Referred to the transport planning team. Traffic modelling indicates that only small increases in the volume of traffic are anticipated. There are planned upgrades to Buchanan, Buckley and Uhlmann Roads, key intersections and interchanges
Existing public transport disadvantage will reduce accessibility of new amenities to existing residents (and increase car dependency for new residents on site)	The existing transport disadvantage prevailing in the area was communicated to the transport planning team and comprehensive route planning and bus interchange strategies have been developed by them. It is intended that the service will connect internal destinations within NEBP with key nodes elsewhere in the region with specific attention to railway stations and the King Street civic and community precinct.
The scale of the site reduces opportunity for walkability	A network of recreational walking and cycle paths are have been planned for within the Landscape Master Plan. Consideration has also been given to creating strong pedestrian connections with the surrounding community and between the on site activity nodes.

Social Infrastructure

The rapid growth of the residential population throughout the study area has already put pressure on the civic and social infrastructure, in several key areas including health care and community infrastructure capacity lags demand. The emergence of new audiences with different lifestyle aspirations will challenge the current provision of infrastructure, services and programming.

There is a pre-existing lack of capacity in	The project proponent understands the need to deliver self containment in terms of local scale social and community services.

existing areas – specifically primary health care and schooling	It is there intent to work with the 'market' to identify and deliver a health centre to meet the needs of the on site resident (and workforce communities) as the population matures. The developer has incorporated a site appropriate to a P-7 school within the master plan acknowledging the threshold of population required for a primary school will be reached once the population on site matures. It will work with the State Government to determine whether a State primary school is the optimal outcome.
New social infrastructure must be delivered in a timely fashion	A comprehensive list of infrastructure and amenity has been identified and the project proponent has incorporated the core requirements into both the master plan and proposed tenancy mix for the development. Securing appropriate private sector providers will form part of the leasing strategy and timeframes for delivery are linked to population build up. The early provision of community infrastructure including meeting rooms, program and socialisation spaces has been considered in the delivery of a community hub and the golf course club house.
Changes in appetite for lifestyle and recreational appetite are not recognised and responded to	The area is seen as lacking higher order amenities, particularly with respect to cafe and dining opportunity. The project proponent has explored emerging lifestyle needs through audience segmentation and community consultation. The provision of the marina and its associated retail and dining precinct together with the extensive regional parkland will meet the demand for higher order amenities identified in this process.
There is a loss of cultural heritage	The site in its present format fails to capture the significant Indigenous and early European heritage. The Cultural Heritage Management Agreement, proposed heritage park and public art program will protect and preserve the unique heritage of the site and make the culture of the local indigenous community more accessible. The heritage park will be delivered using a reference group drawn from the local community to ensure it meets local expectations and is culturally sensitive.
There is poor integration with the existing community who are not therefore able to benefit from the amenities	A community development strategy including the delivery of an early community hub will build on the relationships and goodwill created throughout the consultation phase. Representatives from the immediate neighbourhood has expressed excitement and enthusiasm for the project in a recent community film. Transport and skills training strategies, together with on-going community participation in the heritage park design will reinforce physical and emotional connectivity and establish a pattern of use for the site that embraces a broad range of local people from the outset.
Economic Development *The former Caboolture LGA had achieved less than 50 per cent self containment in terms of employment, and the local economy is based on a relatively restricted employment base. There are pockets of high unemployment and leakage of the labour market.*	
The profile of employment created will not be suited to the local skills base	A skills and employment strategy for NEBP has already been developed in consultation with the construction team, local TAFE. CADET as a preferred job network provider and many local peak bodies and community organisations working in the area. A dedicated project manager has been working with the local community for more than twelve months to develop a pathways model and ensure that optimal State and Federal funding opportunities have been established. The skills plan acknowledges the need for site specific skills to be developed as well as general skills upgrades for the local workforce. Pastoral care will also be critical to ensuring that smooth transitions from school or welfare to work are achieved and this has been recognised in the business delivery model as well as the funding applications. There are further opportunities to partner with the ACC and local chamber of commerce to expand the skills audit and sector analysis that is already underway for the MIBA and Marina.
There are multiple barriers to employment that are experienced by local unemployed people	
The local businesses may experience a loss of their skilled and trained workforce as new opportunities emerge on site.	

Construction Issues *The development of any large scale and long term project inevitably results in intermittent disruption to the local community – to some extent. The issues created may be very significant in terms of how they are perceived but less serious in terms of their impact if and when they eventuate. The length of the construction period (including enabling works and site specific construction) is however considerable and therefore careful communication with the local residents will be important.*	
Lack of information – things just happening.	NEBP recognises that poor information flow exacerbates the anxiety experienced by residents. An extended community engagement strategy using the same nominated representative has already been committed to. A community hub at the sales and information centre will be established as soon as practicable.
Noise, light and emissions impacting on quiet enjoyment	It is anticipated that concern about this issue will be greater than the actual impact and therefore careful monitoring and on-going consultation is a key mitigation strategy.
Traffic and transport issues – out of hours traffic, delivery vehicles on local roads, noise, emissions and safety issues.	The construction management plan will mandate delivery routes and hours of operation and will work with the community engagement team to ensure information is appropriately disseminated.

3.11.6 Policing

The social infrastructure requirements necessitated by the proposed resident and workforce community at the NEBP site were considered in Appendix F of the NEBP EIS. The needs assessment was undertaken based on the principle of self containment for the development with respect to its local needs and adopted a mature population comprising 5,715 new on site residents and 9,000 workers to supplement the established residential population in the core catchment (as defined in the study) of 4,000 people. The provision of emergency services including policing was considered in this context.

The Queensland Social Infrastructure Implementation Guidelines July 2007 were issued during the consultation period and were used to inform the assessment wherever there was an applicable service standard listed, unfortunately there was no comparative service provision listed for the policing.

The fieldwork ascertained that there are currently 9 police facilities located within the former Caboolture Local Government Area, specifically:

- Beachmere Neighbourhood Police Beat;
- Bribie Island Police Service;
- Burpengary Neighbourhood Police Beat;
- Deception bay Police Beat Shopfront;
- Morayfield Police Beat Shopfront;
- Narangba neighbourhood Police Beat;
- Queensland Police at Caboolture;
- Tullawong Neighbourhood Police Beat; and
- Woodford Police Station.

In addition there are also police beats at Kallangur and Mango Hill (North Lakes) which are within the extended catchment for the project but beyond the former Caboolture Local Government Area.

The community context study, existing as Appendix F of the NEBP EIS recommended that space be made available for the inclusion of a 'police beat' in the development. However

the Burpengary East Neighbourhood Watch co-ordinator in consultation with Neighbourhood watch members and local police, indicated that the existing Neighbourhood watch has the capacity to expand to include the residential component of the development.

3.11.7 Cultural Heritage

Consultation through general public community information days identified the Preservation of Indigenous, Australian South Sea Islander and early European heritage as important community matters.

Social amenity to celebrate and share the collective history of the past were identified by respondent community members and interest groups through consultation activities and these community values planned for via a designated Heritage Park as part of the MIBA community node planning, detailed within the Landscape Master Plan presented as Appendix P of the NEBP EIS.

As a result a Non-Indigenous Cultural Heritage Management Agreement was developed beyond the requirements for the EIS as detailed in Appendix T5 of the NEBP EIS.

During the ToR phase there was also a strategy of engagement with appropriate representatives from the local indigenous community, including Traditional Owners the Gubbi Gubbi people – which culminated in the Cultural Heritage Management Plan. A summary of this consultation is included in pp 266 – 273, chapter 4 of Appendix F of the NEBP EIS.

A series of cultural surveys were undertaken relating to the site as detailed Appendix T1, T2 and T3 of the NEBP EIS. The Hornery Institute also provided a brief detail of cultural settlement in the region detailed on pp 19-21 in Appendix F of the NEBP EIS.

Under the Aboriginal cultural heritage legislation in Queensland, a CHMP must be developed when an EIS is undertaken and a CHMP is mandatory if the project requires some form of permit, approval or licence. This is the background to preparing a CHMP which was presented as Appendix T4 of the NEBP EIS. The DNRW have confirmed the voluntary registration of the CHMP and proposed a condition for the CG's consideration.

3.11.8 Housing Strategies

Housing strategies for NEBP will be developed with a view to meeting existing and local demand in the area, specifically two key arguments have been considered:

- the delivery of housing diversity and choice; and
- the provision of affordable housing.

3.11.8.1 Housing Diversity and Choice

The ABS 2006 Census established that at the time of data collection there were 51,656 private dwellings in the former Caboolture Local Government Area (an increase of 8,127 dwellings since 2001). Of these dwellings 27.8 were being rented and 34.9%being purchased – reflecting an increase of 1.5& in rentals and 2.3% in mortgaged homes over the period since 2001. The vast majority of the dwellings were separate houses 87.6% across the former local government area, with 6 per cent of the available stock considered 'semi detached' and 5 per cent comprising apartments.

The Draft Caboolture Shire Housing Needs Assessment Report: March 2007 undertaken by Andrea Young, Briggs and Mortar to inform the Local Growth Management Strategy indicates that demand outstrips supply in all sectors of the housing market. This overarching demand is driven by the significant and sustained planned population growth in

the area, with the changing demographic characteristics of the resident base placing additional pressure on certain sectors of the housing market, specifically:

- ageing independents looking for opportunities to downsize in adaptable units and relocate into more centralised areas;
- a growing proportion of lone person and couple households seeking smaller sized dwellings;
- increasing quota of first time buyers often with young families, seeking value for money;
- a growing cohort of affluent families seeking high quality and premium priced homes; and
- changing profile of families seeking accommodation in social housing where demand for homes with more than 3 bedrooms as well as 1 bedroom apartments is growing.

Andrea Young, Briggs and Mortar also indicates a growing demand for rental property at all price points, with vacancy rates for private rentals at less than 3 per cent. This study suggested rental increases of 33% for three bedroom properties and 47 per cent for one bedroom properties over the period 2001 -2006.

There is a clear deficit of housing opportunity at all ends of the spectrum. An aggregation of the Andrea Young, Briggs and Mortar research with the research undertaken to inform the social impact assessment for NEBP indicates that there is currently a deficit of:

- premium priced and prestige homes;
- small lot homes 450 – 600 m^2;
- centrally located town house and medium density apartment options;
- affordable accommodation (1+2 bedrooms);
- adaptable accommodation for independent seniors;
- rental stock at all price points; and
- social housing units.

NEBP is not primarily a residential project. By completion the project will accommodate 100 hectares of mixed density residential opportunity comprising detached dwellings on a range of lot sizes as well as range of medium density unit developments. The proposed mix of residential opportunity will add to the diversity of housing available in the region, specifically addressing the rapidly growing demand for:

- premium priced and prestige homes;
- small lot development (600 m^2); and
- medium density apartments – particularly appropriate to downsizing couples and emerging professionals.

The development also offers the ability to accommodate independent (and adaptable) living opportunity for seniors and will inevitably have a mixed profile of owner occupied and investor owned properties, thereby increasing the availability of rented stock in the area.

3.11.8.2 Housing Affordability

The Proponent understands that affordable housing is both a pressing social need in the area and a significant political issue. It recognises that whilst the Caboolture area is perceived as representing 'good value for money' in the context of house prices across South East Queensland, exponential increases in rental and capital values in the area since 2001 mean that housing affordability is increasingly becoming an issue for mainstream households in the area (and is particularly pertinent to established residents in the area). It is also recognised that the area has historically been associated with public

housing stock. In this context, the level of public housing provision as a percentage of overall dwellings has steadily declined whilst demand for this provision has intensified.

Direct consultation with the Queensland Department of Housing (as well as their attendance at All Agency Briefing sessions) was undertaken with respect to the provision of affordable accommodation at NEBP. It was determined that the development was not optimally located for the delivery of affordable housing given its distance from existing and proposed public transport nodes and the existing regional hub for government administration and human services located in Caboolture (and to some extent in Morayfield). It was also confirmed that the Department did not have any current plans to increase the provision of public social housing in the area.

The Department representatives indicated their support for the assertion that the indicative residential development proposed for NEBP would add significantly to the existing diversity of housing by both style and price point and would extend the choice of housing environment available in the former Caboolture LGA. This strategy would have a two fold effect:

- increasing the choice of housing at the mid to upper price points would meet the needs of upper quartile families seeking to move to or within the area for lifestyle reasons or pursuant to employment opportunity, and would therefore relieve pressure on other sectors of the housing market in the area; and
- by attracting more affluent families to the local area, the overall SEIFA index score of the community would be improved and the population base diversified.

The Department further recognised that the development of units in a medium density format would extend housing choice in an area where there is currently a relatively low supply of unit dwellings with 1 – 3 bedrooms.

Recognising the need to fulfil social obligations with respect to regional demand for affordable housing, the proponent indicated their preparedness to make a capital contribution, suggesting the suitability of the Caboolture area to a housing company approach. This accords with the State Government's Affordable Housing in Sustainable Communities Strategic Action Plan, Key Strategy 3 "Initiate new partnership and mechanisms to deliver affordable housing in sustainable communities". Specifically it accords with Priority Action 15, "identify opportunities to enhance the efficiency and effectiveness of housing markets" which recognises that improving the operation of housing markets will help promote the supply of affordable housing where and when it is needed.

During the community context study period (and subsequent consultation with the Housing Department), both Federal and State Government policy with respect to housing affordability were in a state of flux and it was therefore inopportune to develop the strategy further. It was agreed that a further series of meetings would be convened to establish the scope of the opportunity and the most appropriate framework for its delivery, once the future of the project had been determined.

In summary technical reports providing an assessment of social impact and which should be referred to when making an informed decision regarding the NEBP development proposal are tabulated below.

Table 21 Social EIS Technical Appendices

Appendix Location	Appendix	Report Title
NEBP EIS	Appendix C2	Planning Report
NEBP EIS	Appendix F	Community Context Study
NEBP EIS	Appendix G	Community Consultation Study
NEBP EIS	Appendix P	Landscape Masterplan
NEBP EIS	Appendix T1	Cultural Heritage Assessment of Lots 10 and 2
NEBP EIS	Appendix T2	Cultural Heritage Assessment of Lots 24 and 7
NEBP EIS	Appendix T3	Cultural Heritage Survey Report
NEBP EIS	Appendix T4	Cultural Heritage Management Plan
NEBP Supplementary EIS	Appendix A	Supplementary Planning Report

3.12 Health and Safety

3.12.1 Mosquito Control

Section 4.8.1.2 of the NEBP EIS identified that the main invertebrate pest species known to occur in the site locality are species of mosquito and biting midge. The freshwater and saline wetlands and waterbodies within the site locality presently provide a range of different habitat types for a variety of mosquito species known to be serious pests and vectors of communicable human viruses within the (then) Caboolture Shire.

Biting midge species are not known to transmit disease amongst humans and as such do not possess the same public health management significance as mosquitoes. Nevertheless biting midge may during periods of high abundance cause discomfort to people residing in close proximity to midge breeding/larval habitats. It is likely that the NEBP site provides habitat for the several pestiferous species of biting midge, namely *Culicoides subimmaculatus, C. molestus* and *C. longior*. The main areas of potential breeding habitat for these species are the mangrove flats and banks of the Caboolture River and Raff Creek.

The NEBP development considered mosquito control in its design as:

- it reduces the extent of available mosquito breeding habitat, through the removal of some ephemeral waterbodies and constructed drainage channels (note substantial areas of biting insect breeding habitat would be retained due to their recognised environmental values);
- waterbodies associated with stormwater quality management have been minimised and where required, to achieve compliance with the design specifications of section 4.3.2.2 – Artificial wetlands/water impoundments of Queensland Health's Guidelines to Minimise Mosquito and Biting Midge Problems in New Development Areas;
- dredging components of the NEBP development do not impact on tidal flushing and hydrology significantly so as to increase the risk of ponding water;

- building design, as indicated in the NEBP Area Plan, is consistent with the philosophy of a contemporary and sustainable design with inhabited buildings fitted with screens on windows and doorways to minimise the potential for adverse amenity and/or health impacts associated with exposure to mosquito and biting midge; and
- community awareness of pest species was incorporated into the NEBP operational management plan.

3.12.2 Noise Quality

Sleep Disturbance

A Noise Impact Assessment was prepared to address the ToR and support the NEBP EIS, provided as Appendix N.

The assessment predicted noise levels from the construction and operation of the NEBP by using a worst case scenario of plant and equipment at the extremities of the bulk earthworks and ultimate MIBA precinct. Both the bulk earthworks and operational activities of the business park were identified as having the potential to cause environmental nuisance from the introduction of noisy plant and equipment considering the ambient acoustic environment.

The assessment predicted construction and operational noise levels at closest sensitive receivers as maximum equivalent continuous sound pressure levels. The findings indicated noise generating equipment, particularly during the construction stage, may have the potential to adversely affect close noise sensitive places and consequently mitigation measures were recommended. For operational noises proposed as part of the business precinct, it was concluded that an objective of 55 dB(A) $L_{Aeq,T}$ would be achieved.

This assessment was undertaken based on day time predictions, particularly as no continuous noisy plant and equipment will operate throughout the night when sleep disturbance criteria applies, without sufficient attenuation at the source.

The World Health Organisation's *Guidelines for Community Health* (1999) state that an internal night-time noise level should not exceed 30 dB(A) $L_{Aeq,T}$. It is proposed that as noise will not be continuous during night time hours, as would be the most realistic scenario at the NEBP site, maximum internal noise levels should not exceed 45 dB(A) more than 10-15 times for a good night sleep (i.e. 8 hours) as designated in the Ecoaccess Guideline (2004) for "Planning for Noise Control".

Given the lack of knowledge governing the ultimate land uses within the business park at the preliminary planning stage, activity specific assessments may need to be undertaken in conjunction with further development applications when new activities are proposed that could affect the noise quality in the NEBP site and beyond.

Such assessments would need to consider the existing architectural treatment of close noise sensitive places to determine the existing attenuation capacity and be based on realistic attention distances.

At this stage it is proposed that the mitigation measures included in sections 5.2 and 5.3 of Appendix N are satisfactory to avoid sleep disturbance for the construction and operational components of the NEBP having regard to the above statement.

3.12.3 Air Quality

An air quality assessment was undertaken by Katestone Environmental to support the NEBP EIS and to specifically address relevant TOR, and was presented as Appendix O in

the NEBP EIS. The following information regarding air quality is provided subsequent to public comment on the EIS.

The main findings of this assessment included the following.

- Existing air quality at the NEBP site is likely to be within ambient air quality standards and, therefore, does not provide a major constraint for development.
- New industries should be designed and operated to ensure compliance with air quality standards and to minimise air pollutants to the maximum extent that is economically feasible.

Existing Air Quality

Section 5.2 of Appendix O summarises the existing air quality in the region and expected air quality at the NEBP taking into consideration existing sources of pollutants, available monitoring data and NPI data.

The Bruce Highway is a source of air pollutants that may affect the site. The Bruce Highway is located 50 metres to the west of the MIBA area of the NEBP development. The main pollutants with implications for human health that are emitted by motor vehicles include carbon monoxide, oxides of nitrogen, particulate matter and volatile organic compounds. Whilst the Bruce Highway is expected to be an important source of air pollutants, it is well separated from the business park and residential areas and consequently the ground-level concentrations of air pollutants associated with it will be well below air quality standards and goals.

There are a number of existing industrial facilities within Caboolture Shire including poultry farms, log saw milling, gravel and sand quarrying, wood product manufacturing, pet food preparation and petroleum storage (NPI 2004-2005). The NEBP is well removed from these sources and the existing air quality is unlikely to be greatly influenced by industrial emissions to and from the NEBP, including the Narangba Industrial Estate.

A number of facilities reported to the National Pollutant Inventory in 2004-2005. A total of 23 substances were reported. All facilities have relatively low emission rates of all the reported substances, compared to other facilities in Australia.

There are no monitoring stations at Caboolture. The closest monitoring stations are Deception Bay to the south (pollutants measured are ozone, nitric oxide, nitrogen dioxide and oxides of nitrogen) and Mountain Creek (pollutants measured are ozone, nitric oxide, nitrogen dioxide, oxides of nitrogen and PM_{10}) to the north of the NEBP. The air quality assessment used PM_{10} data from Mountain Creek (as none are available from Deception Bay) to indicate expected regional dust levels in the absence of local data for quantifying total dust impacts.

There is no information available that would suggest that the monitoring data would be likely to provide an unreliable estimate of the local conditions.

Future Air Quality

In relation to the potential impacts on existing and future residential areas, a site specific assessment could not be undertaken as the exact nature of industries within the MIBA precinct and activities in the Marina Precinct are unknown. However, if preliminary design ensures compliance with the limits specified in Section 6.1 of Appendix O and the sensitive land uses in accordance with the distances shown in Section 6.2 of Appendix O, adverse air quality impacts are unlikely to occur.

Recommendations were given that a site specific assessment may need to be undertaken in conjunction with development applications for new activities that could affect air quality in the NEBP and beyond.

3.13 Environmental Management Plans

3.13.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) was prepared as part of the NEBP EIS and presented as Appendix X2. The CEMP was prepared to provide assurance that the recommendations made in the NEBP EIS technical investigations will be implemented during the construction of the development to avoid potential environmental impacts.

This CEMP is considered a dynamic document which will be continually reviewed to ensure detailed design investigations are reflected in construction methodology and management techniques and ensure compliance with any relevant conditions imposed by the approval process.

The preparation of a CEMP at this preliminary approval stage, for which the NEBP EIS was required, is considered best practice environmental management and reinforces the Proponent's objective of introducing to stakeholders a sustainable vision and assuring the practicality of mitigation measures committed to through the NEBP EIS for the construction of the NEBP.

The roles and responsibilities of various referral agencies will be further detailed upon continual review following development approval conditions.

3.13.2 Marina Site Based Management Plan

The Marina SBMP was presented as Appendix Y1 of the NEBP EIS and forms the basis of sustainable management of the marina short- and long-term.

The report by Cardno Lawson Treloar entitled '*Northeast Business Park - Marina Water Quality Management Plan*', was presented as an appendix to the Marina SBMP which also provided an assessment of water quality within the NEBP marina.

The purpose of the Marina SBMP is to demonstrate the environmental commitment by the Proponent and Operator to carry out activities in accordance with a structured program that:

- sets the environmental objectives or standards to be achieved over time;
- identifies the potential environmental harm and extraordinary factors that may cause environmental harm resulting from routine operations and establishes and documents measures to avoid and/or manage this harm as far as practicable;
- ensures all persons carrying out the activity are aware of environmental risks, and are trained in the measures and contingency plans to deal with them;
- implements monitoring of environmental performance to ensure the effectiveness of the measures and contingency plans;
- assists the communication authorities; and
- provides for continual improvement.

The Marina SBMP shall be updated prior to the marina operation to incorporate:

- notification of appropriate authorities, including the Department of Environment, Water, Heritage and the Arts, in the event of waste spills;

- notification of appropriate authorities, including the Environmental Protection Agency Marine Parks division, of boat user education initiatives by the Proponent;
- recommendations made in the Supplementary EIS as they relates to dredging works; and
- conditions of any subsequent development approvals.

3.13.3 Dredging Site Based Management Plan

The NEBP EIS assessed the direct and indirect impact of dredging which culminated in the requirement for a Dredge Site Based Management Plan (Dredge SBMP) to mitigate and prevent direct and indirect associated with dredging activities in a relatively undeveloped waterway in Southeast Queensland. The Dredge SMBP was presented as Appendix R3 of the NEBP EIS.

The Dredge SBMP shall be updated prior to works commencing to incorporate:

- notification of appropriate authorities, including the Department of Environment, Water, Heritage and the Arts, in the event of waste spills;
- recommendations made in the Supplementary EIS as they relates to dredging works;
- conditions of any subsequent development approvals.

3.13.4 Golf Course Management

Through appropriate planning and design, construction and maintenance golf courses can provide benefits to the environment.

Appropriate planning and design of the NEBP golf course was undertaken having regard to the ecological values of the existing land and was considered an appropriate land use for flood mitigation purposes and stormwater management for urban form. Native vegetation has been incorporated into the design and existing vegetation will be retained.

The construction of the golf course was considered as part of the development of the indicative Construction Environmental Management Plan provided as Appendix X2 of the existing NEBP EIS.

Best practice environmental strategies for golf courses operation incorporate water and energy strategies, and those that protect and enhance local plant species which will in turn promote wildlife habitat, partially offsetting the original impact of loss of habitable land. During operation, the golf course shall be operated under an environmental management plan, and which shall be prepared as part of the Operational Works approval stage.

This plan shall incorporate strategies that are consistent with golf course best practice environmental management including:

- the sustainable and controlled use of fertilisers;
- the protection of wildlife and wildlife habitats;
- the management of species that may build into pest numbers affecting environmental values or the amenity of the area (particularly on edges);
- reaffirm the proposed soil condition monitoring;
- appropriate waste management; and
- water reuse; and
- the provision for education of the public on relevant practices;

FIGURES

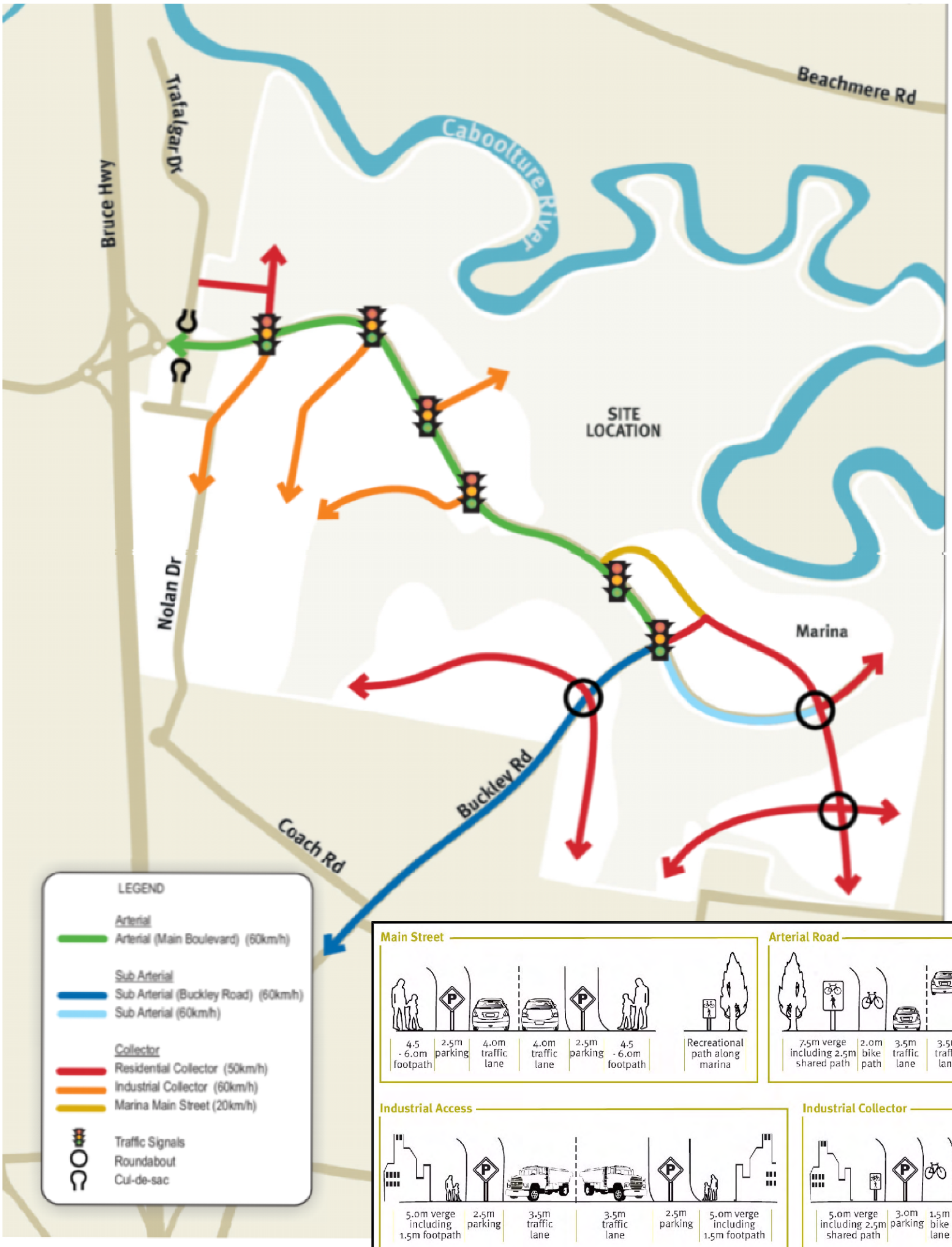


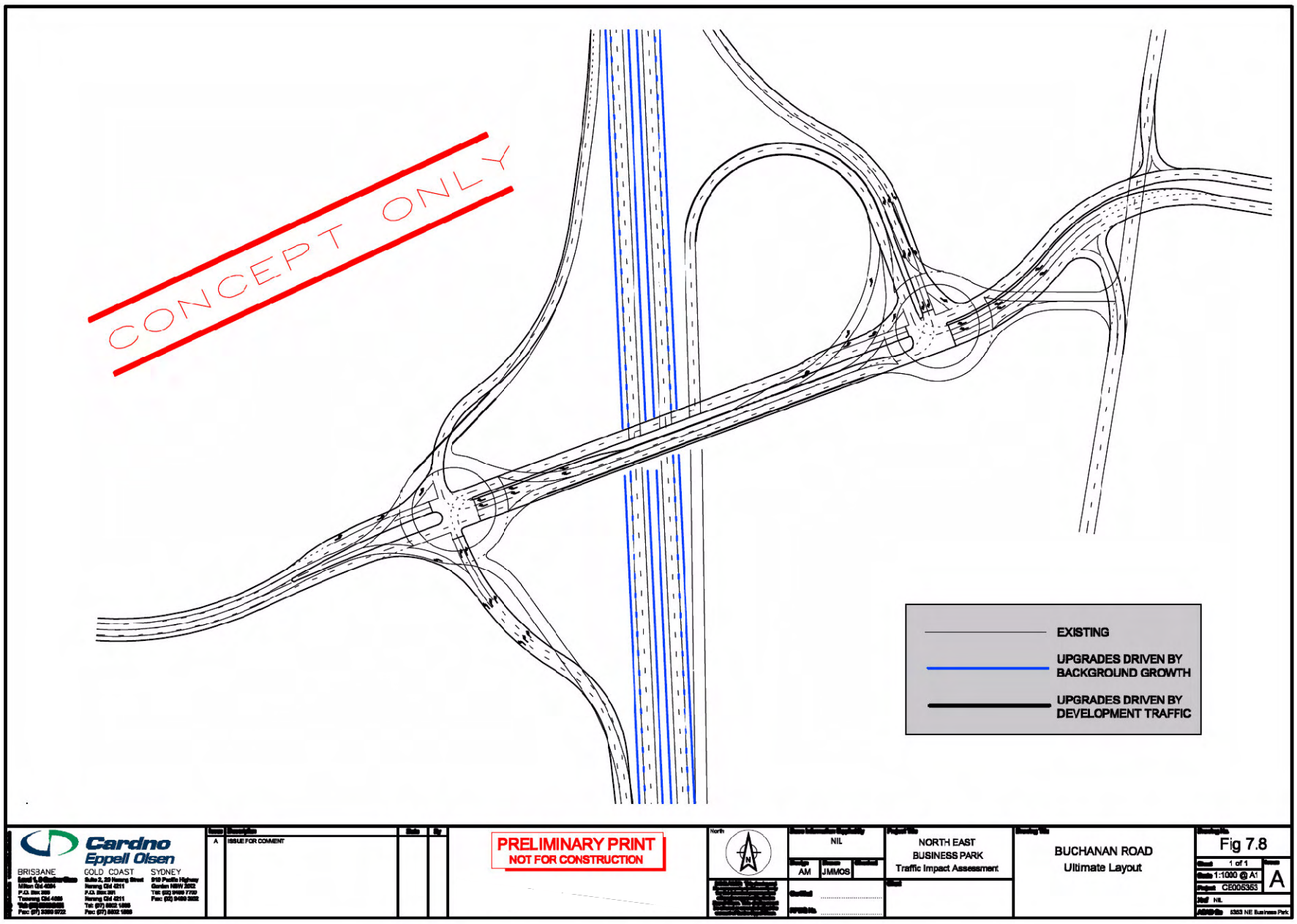
FIGURE 1
CONCEPTUAL ROAD LAYOUT AND CROSS SECTIONS

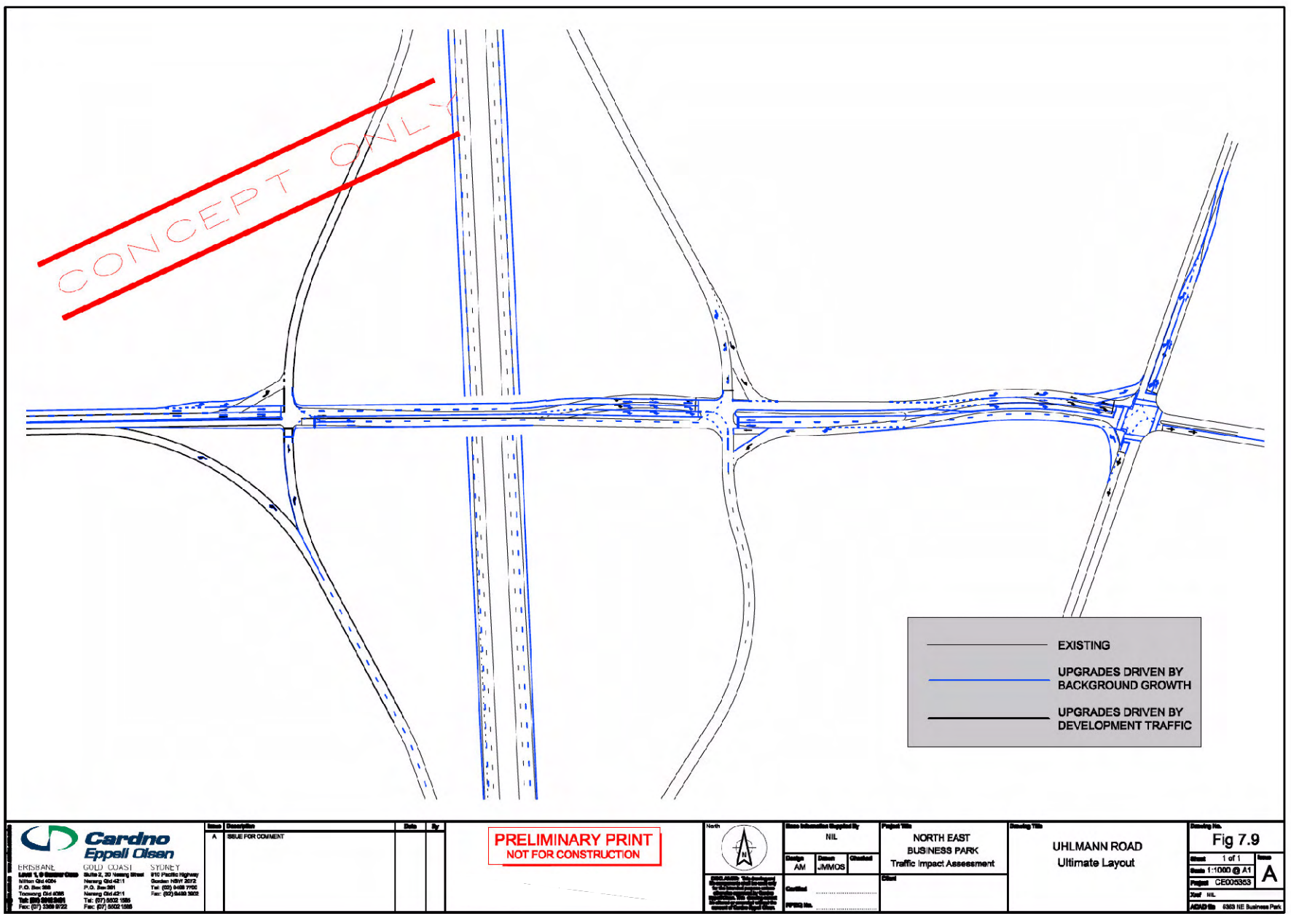
Rev: Orig. Date: 10 July 2008

Project No.: 7800/40

Northeast Business Park Pty Ltd

PRINT DATE: 10 July, 2008 - 4:43pm
CAD FILE: I:\7800-40\ACAD\EIS\Supplementary EIS\Figure 1 - Revised Conceptual Road Layout and Cross Sections.dwg
XREF's: Caboolture_mga94





Not to Scale

FIGURE 2

REVISED ULTIMATE CONFIGURATION OF BUCHANAN AND UHLMANN ROADS

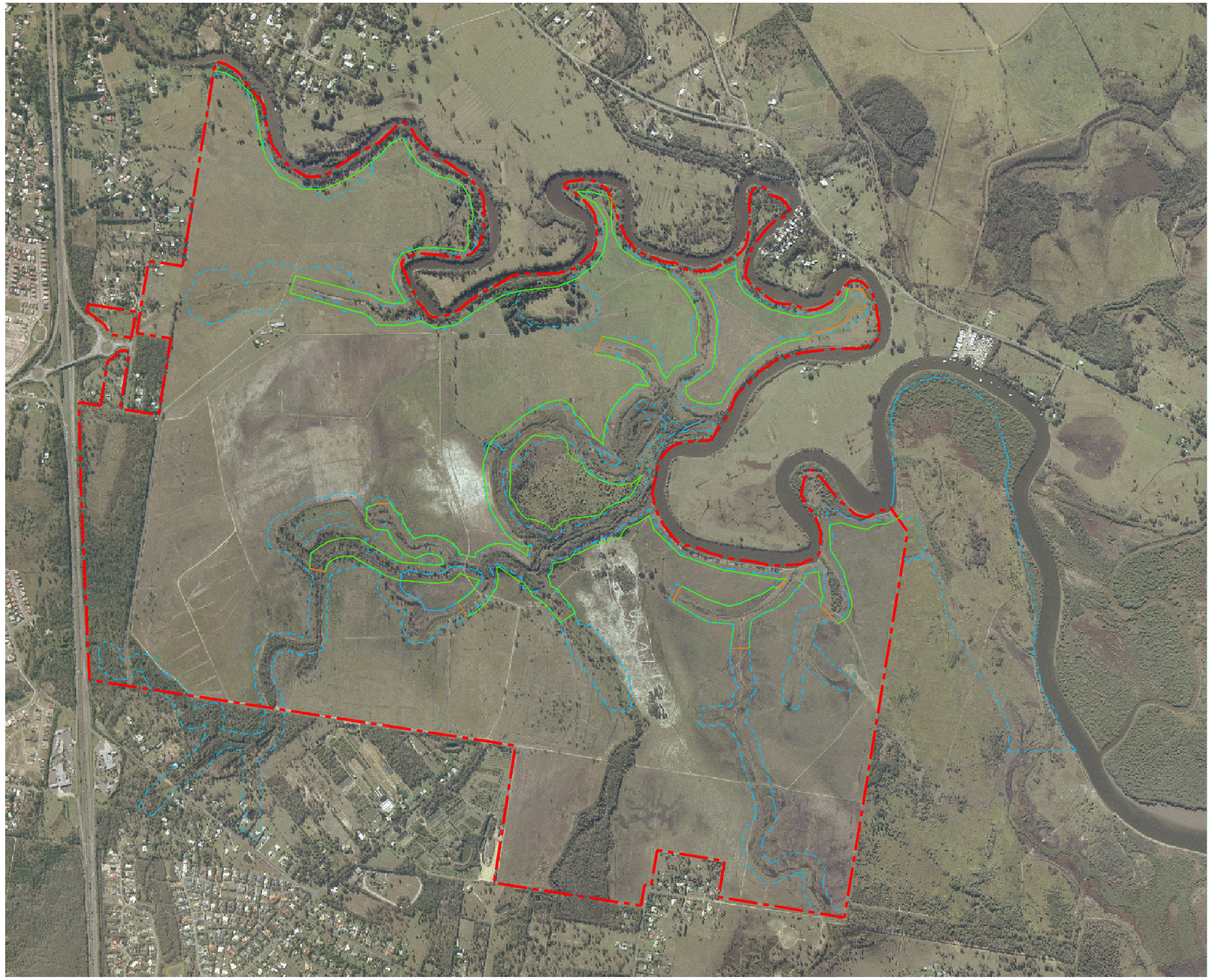
Project No.: 7800/40

Rev: Orig. Date: 10 July 2008

Northeast Business Park Pty Ltd

CAD FILE: I:\7800-40\ACAD\EIS\Supplementary EIS\Figure 2 - Revised Ultimate Configuration of Buchanan and Uhlmann Roads.dwg
XREF's: Caboolture_mga94

PRINT DATE: 10 July, 2008 - 4:52pm



LEGEND

Site Boundary

Coastal Management District boundary position - Mean High Water Springs (M.H.W.S) + 40 metre criteria.

Coastal Management District boundary position - Highest Astronomical Tide (H.A.T) criteria.

NOTE!
THE POSITIONS OF M.H.W.S AND H.A.T LEVELS WERE DETERMINED USING DETAILED GROUND SURFACE LEVEL SURVEY DATA, HIGH RESOLUTION AERIAL PHOTOGRAPHY (CIRCA JUNE 2007) AND GROUND TRUTHED VEGETATION MAPPING.

THE LANDWARD EXTENT OF MANGROVE OCCURRENCE WAS USED AS THE BASIS FOR DETERMINING THE FUNCTIONAL M.H.W.S LEVELS ACROSS THE SITE.

THE LANDWARD EXTENT OF SALTMARSH VEGETATION WAS USED AS THE BASIS FOR DETERMINING THE FUNCTIONAL H.A.T LEVELS ACROSS THE SITE.

Coastal Management District as per SEQ RCMP

Scale 1:20,000 (A3)

FIGURE 3
REVISED COASTAL MANAGEMENT DISTRICT

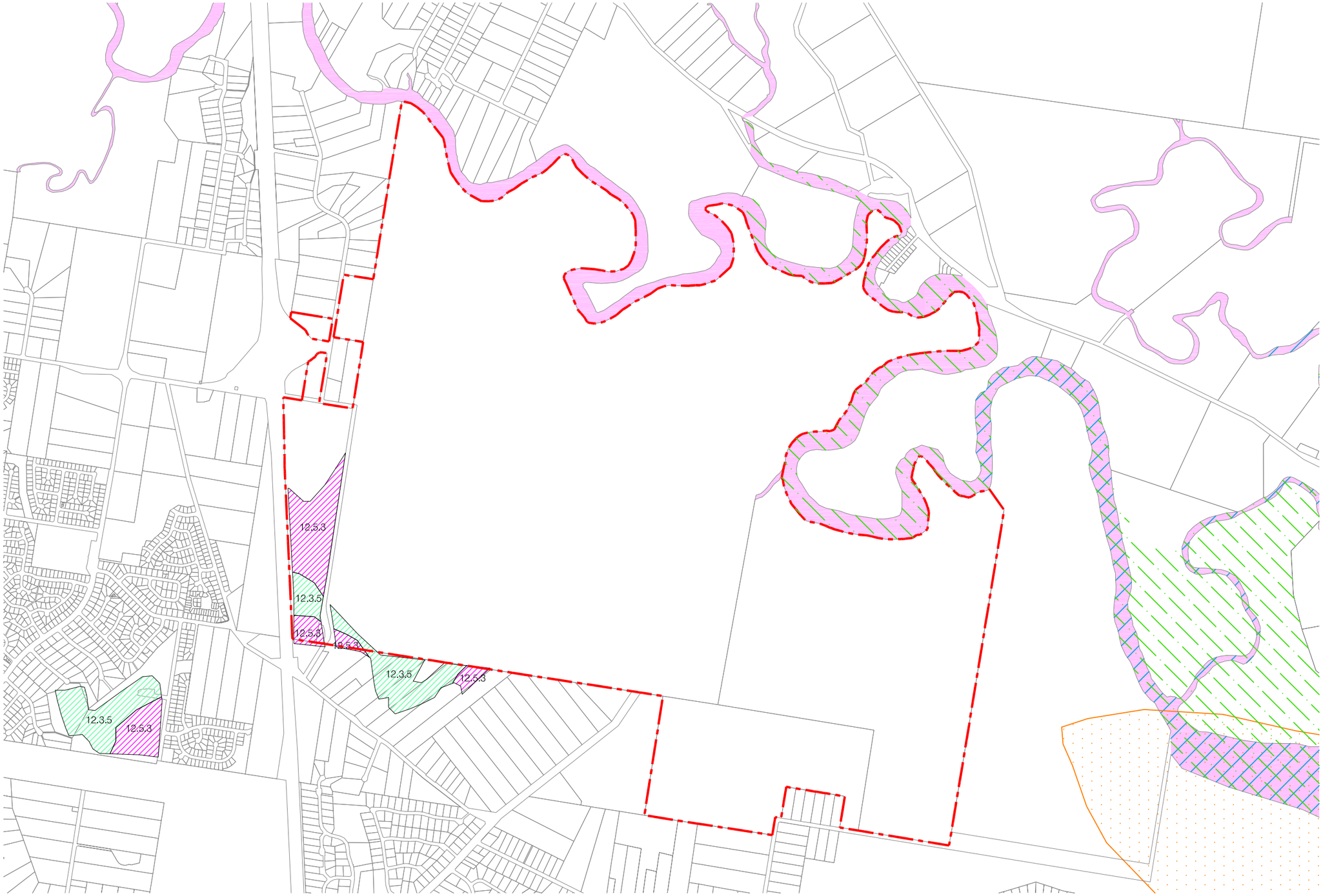
Rev: Orig. Date: 10 July 2008

Project No.: 7800/40

Port Binnli Pty Ltd

CAD FILE: I:\7800-40\ACAD\EIS\Supplementary EIS\Figure 3 - Revised Coastal Management District.dwg
XREF's:

PRINT DATE: 10 July, 2008 - 4:53pm



Map disclaimer: 2003 Regional Ecosystem Map. Date: 21.06-07. Regional ecosystem linework reproduced at scale greater than 1:100,000, except in designated areas, should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100,000 is +/-100 metres. Regional ecosystem mapping reproduced with permission of Environmental Protection Agency 2007.
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200 0 200 400 600 800 1000m
1:20,000

Scale 1:20,000 (A3)

FIGURE 4
REVISED AREAS OF CONSERVATION SIGNIFICANCE

Rev: 2. Date: 10 July 2008

Project No.: 7800/40

Northeast Business Park Pty Ltd

CAD FILE: I:\7800-40\ACAD\EIS\Supplementary EIS\Figure 4 - Revised Areas of Conservation Significance.dwg
XREF's: Caboolture_mga94; redata

PRINT DATE: 10 July, 2008 - 3:58pm

DRAWINGS LIST

Drawing No.	Description
7900/33/05-104 (B)	Bulk Earthworks - Keyplan for Site Sections
7900/33/05-108 (B)	Bulk Earthworks Site Sections – Residential East & Marina, Sheet 4 of 5
7900/33/05-109 (B)	Bulk Earthworks Site Sections – Flood Mitigation Zones, Sheet 5 of 5
7900/33/05-110 (A)	Embankment Details
7900/33/05-200 (B)	Roadworks – Road Layout Plan
7900/33/05-201 (B)	Typical Road Cross Sections – Arterial Road and Sub Arterial Road
7900/33/05-202 (B)	Typical Road Cross Sections – Industrial Collector and Industrial Access
7900/33/05-203 (B)	Typical Road Cross Sections – Residential Collector and Residential Access
7900/33/05-204 (B)	Typical Road Cross Sections – Main Street and Residential Collector
7900/33/05-203 (B)	Cut and fill site sections – Sheet 3 of 4
7900/33/05-600	Cut and fill site sections – Sheet 4 of 4
7900/33/05-601	Supplementary EIS Responses – Q100 Flood Modelling
7900/33/05-602	Supplementary EIS Responses – Q50 Flood Modelling
7900/33/05-603	Supplementary EIS Responses – Q20 Flood Modelling
7900/33/05-604	Supplementary EIS Responses – Q10 Flood Modelling
7900/33/05-605	Coastal Management District – Flood Mitigation Areas